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CLARK FORK RIVER MACROINVERTEBRATE STUDY, 1986

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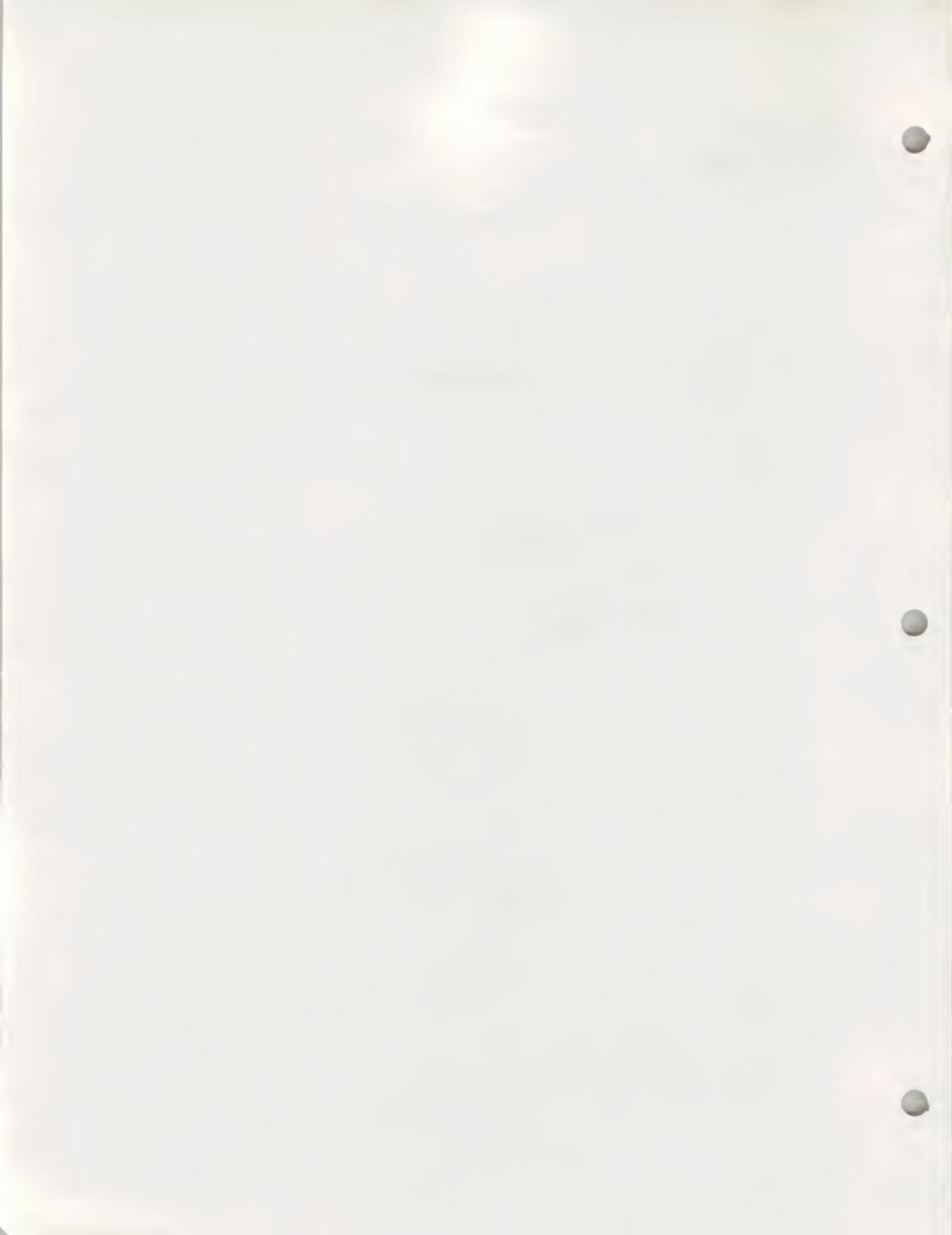
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June, 1987

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1.0 INTRODUCTION

Concern that industrial and municipal effluents, wide-spread metal contamination and non-point source pollution have degraded water quality in the Clark Fork River drainage has resulted in numerous water quality and biological monitoring programs. Recently, macrobenthos investigations have been conducted on various reaches of the Clark Fork River by the Montana Department of Health and Environmental Sciences (MDHES Biological Monitoring Reports 1979a and b; unpublished data 1980 and 1983; Hornig and Hornig 1985), U. S. Environmental Protection Agency (Janik and Melancon 1982), Anaconda Company (Canton and Chadwick 1985; Chadwick, Canton and Dent 1986), Montana Power Company (MPC 1982; McGuire 1984) and the Institute of Paper Chemistry (IPC annual reports beginning in 1956; Rades 1985). This is the first study to encompass the entire river, with 27 sampling locations between Butte and the Idaho border (Figure 1). As part of a comprehensive surveillance program, the purposes of this study are to monitor the integrity of macroinvertebrate assemblages in the river, to detect changes in water quality and to provide data for water-quality management decisions.

2.0 METHODS

2.1 Field work

Benthic macroinvertebrates were collected by Montana Governor's Office and Water Quality Bureau staff between August 11th and 21st, 1986. A modified Hess sampler was used to obtain four replicate samples at each of 23 stations between the headwaters of Silver Bow Creek and the Clark Fork River's confluence with the Flathead River (Figure 1). Further downstream, large substrates precluded the effective use of a Hess sampler; so modified traveling kick samples (per Hornig and Hornig 1985) were obtained at stations 26, 27, 28 and 30. At each station, photographs and field notes were taken to describe the physical habitat, floral composition and other pertinent conditions.

2.2 Laboratory analysis

Upon delivery to the laboratory, rose bengal dye was added to samples containing appreciable amounts of organic material (primarily Cladophora), and all samples were represerved in 80% isopropyl alcohol. This was done to facilitate recovery of small, soft-bodied organisms and to stabilize weights for biomass determination.

Macroinvertebrates were removed from debris in each sample and sorted to order. Nine samples (noted on the data sheets in Appendix Table 8) were subsampled using a modification of the technique suggested by the U. S. Environmental Protection Agency (Weber 1973). To subsample, the sample was suspended in a U. S.



Standard No. 30 sieve and thoroughly mixed. A divider was inserted into the sieve, which partitioned the sample into equal portions (quarters or eighths). Randomly-selected portions were recombined to form the subsample (half or quarter of the original sample).

The biomass of predominant macroinvertebrate orders was estimated as wet weight and determined to the nearest hundredth of a gram. Macroinvertebrates were identified to the lowest taxonomic level practical using the taxonomic references listed in Appendix B.

2.3 Data evaluation

Many approaches and techniques have been used to interpret macroinvertebrate responses to environmental perturbations. Since any single indice may be inappropriate under certain conditions, a thorough evaluation of data using a variety of techniques usually provides the most useful information from a data set (Lenat et al. 1982; Chadwick and Canton 1984). In this report, four levels of resolution (community, ordinal, functional groups and dominant taxa) were employed to evaluate numerous attributes of the aquatic macroinvertebrate community.

Similarities in the faunal composition among stations 1 through 25 were graphically evaluated using a single-linkage cluster analysis (Hellawell 1978) based on the percentage similarity coefficient (Whittaker 1975). By grouping stations with similar faunas, this analysis provided a biological basis for delineating river reaches and permitted a more meaningful evaluation of differences between stations. It is also a useful tool for confirming or refuting hypotheses and *a priori* classification schemes (e.g. impacts associated with heavy metals are more severe in Silver Bow Creek than in the upper Clark Fork River). Stations where modified kick samples were collected were excluded from this analysis.

After categorizing stations according to their relative compositional similarity, stations were compared using various measures of community structure. Community level analyses consisted of "single number" summaries, which included mean density (individuals/square meter), mean biomass (grams wet wt/square meter), taxa richness (total number of taxa/station and average number/sample), and Shannon diversity (Weber 1973). Statistical comparisons of these parameters were made with a single factor analysis of variance by ranks (Kruskal-Wallis test) and an appropriate multiple range test of significance between pairs of stations (Zar 1974). Non-parametric tests were employed because macroinvertebrate samples usually have heteroscedastic variances and, in many cases, non-normal distributions; conditions which violate underlying assumptions of parametric statistics.



Three other community level indices were calculated after analyses for this report were completed. Values for Equitability (Weber 1973), the Biotic Condition Index (Platts, Megahan and Minshall 1983) and a Biotic Index (Hilsenhoff 1977) were included among the summary statistics in Appendix C but were not evaluated in this report. In calculating the Biotic Index, pollution tolerance values assigned each taxon were obtained from Hilsenhoff (1982), Fraley (1979) or Oswald (1979).

Data were examined at three additional organizational levels (ordinal, functional group and genus/species) for trends between stations and clusters of stations. Abundance and percentage of total abundance (relative abundance) were calculated for orders and functional groups. In addition, taxa richness, biomass and relative biomass were determined at the ordinal level. Taxa dominating the summer fauna and shifts in the dominance hierarchy among selected taxa were noted. The lack of seasonal data precluded more detailed analyses of these parameters.

3.0 RESULTS

A total of 144 taxa were identified in samples collected during 1986 (Appendix A). Insects were represented by 125 taxa and noninsects by 19 taxa. Dipterans were the most diverse order, with 53 taxa, including 42 taxa of Chironomidae. Trichoptera, Ephemeroptera, Coleoptera and Plecoptera contributed 25, 19, 15 and 9 taxa, respectively. Single species of Lepidoptera, Megaloptera, Odonata and Hemiptera were collected. Although noninsects were poorly represented at most stations, the macroinvertebrate fauna included seven families of annelids, six genera of molluscs and single species of amphipod and sponge. Mites, flatworms, and cladocerans were each assigned to a single taxon.

The raw data and summary statistics are presented in Appendices C (numerical data) and D (biomass data) while percentage community similarity coefficients comprise Appendix E.

3.1 Cluster analysis

Cluster analysis, which groups stations by similarities in faunal composition, proved informative in several respects. Clark Fork River stations formed two distinct clusters which, with two exceptions, divided the river into upper and lower reaches (Figure 2). Demarcation of the two groups occurred between station 12 (Bonita) and station 13 (Turah) which bracket the confluence of Rock Creek. Stations 20 (Harper's Bridge) and 22 (Huson), which are above and below the Stone Container Corporation's paper mill, were the exceptions to this longitudinal zonation. These two stations clustered with stations 7 through 12 on the upper Clark Fork River and station 5 (Mill-Willow Creek bypass), a tributary in the headwaters. The downstream cluster was comprised of seven stations on the mainstem of the Clark Fork



River (stations 13, 15, 16, 18, 23, 24, and 25) and a station on the Bitterroot River (station 19).

All 15 stations on the Clark Fork River where Hess samples were taken had linked by the 0.54 percentage community similarity coefficient level (Figure 2 and Appendix Table 2), indicating a relatively similar summer fauna throughout the river. In contrast, each of the stations located on Silver Bow Creek (Stations 1-4) and station 14, on the Blackfoot River, had relatively unique faunas and did not form linkages above the 0.35 similarity level. The relatively high similarity values among Clark Fork River stations were expected, however, the failure of the Silver Bow Creek stations to cluster among themselves and the low similarity coefficients associated with the Blackfoot River require further consideration.

Data for the Blackfoot River (Appendix C, station 14) did not substantiate the widely held belief that it is a relatively unpolluted stream with good water quality and an excellent trout fishery (Watson 1985). The current data also contradicted previous macroinvertebrate studies in the Blackfoot River (Hornig and Hornig 1985; Montana Power Company 1982). For instance, at Wishard Bridge, approximately 2 km (1 mile) downstream of the present sampling location, Montana Power reported an average of 45 taxa with estimated densities exceeding 4,000 organisms per square meter in triplicate modified Hess samples collected on each of five occasions during 1980 and 1981. Since significant changes in water and habitat quality were not in evidence during 1986, the present samples were probably not representative of overall conditions in the Blackfoot River. The data may have indicated a localized perturbation (e.g. silt deposition) or may have been anomalous due to poor sampling conditions (e.g. fluctuating river stage). In either case, the data could not be used for comparison with Clark Fork River stations and was excluded from further analysis.

3.2 Community structure

Highly significant differences (ANOVA by rank, $P = 0.01$, 21 df) existed between stations for each community structure parameter examined (Table 1).

Taxa richness (Figure 3)

Taxa richness, a direct measure of community structure, is sensitive to toxic substances (Wielderholm 1984) and habitat degradation (Lenat 1984). Lapoint et al. (1984) reported that species richness accurately reflected changes in water quality of 15 streams (including Silver Bow Creek) contaminated with metals. Chadwick et al. (1986) found no invertebrates in annual samples from Silver Bow Creek from 1972 to 1974 and an impoverished, but increasing, number of taxa over the next 8 years. Taxa richness was an excellent indicator of metals toxicity in the present study.



During August 1986, the total number of taxa per station (Figure 3) was lowest (15) in Silver Bow Creek and highest (52) at station 15 (CFR below Milltown Dam). Taxa richness increased abruptly between station 3 (Silver Bow Creek above the Warm Springs ponds) and station 7 (CFR below Warm Springs Creek), was stable between stations 7 and 10, and began a gradual upward trend below the Clark Fork River's confluence with the Little Blackfoot River. Multiple range tests of significance ($P = 0.05$) detected a similar pattern for the number of taxa per sample (Table 1).

Shannon diversity (Figure 4)

Mean diversity was lowest in Silver Bow Creek (station 1) and increased significantly below the Warm Springs settling ponds (Table 1). Unlike taxa richness however, diversity values were significantly lower at stations 9 (CFR @ Deer Lodge), 10 (CFR above the Little Blackfoot River), 12 (CFR @ Bonita) and 22 (CFR @ Huson) than at the remaining Clark Fork River stations. Since diversity indices are sensitive to a variety of environmental perturbations (Hellawell 1978; Ward and Stanford 1979), the significantly lower diversity values calculated for some Clark Fork River stations may have indicated a combination of environmental stresses. Nutrient and organic enrichment were probably the major factors affecting diversity at station 22 and were contributing factors at stations 9 and 10 where macroinvertebrate abundance was enhanced. Heavy-metal toxicity may have influenced diversity values in the upper Clark Fork River where low diversity values corresponded with elevated copper concentrations in sediments (Rice and Ray 1985) and water (Montana Water Quality Bureau unpublished data) in this reach.

Macroinvertebrate density (Figure 5)

Macroinvertebrate densities were suppressed by severe metal contamination in Silver Bow Creek at stations 2 and 3. Benthic organisms were more abundant at station 1 (Table 1) where acute toxicity was apparently lessened. Organic enrichment, dilution and (probably) transformation of metals into less toxic forms by the Butte sewage treatment plant's effluent allowed a few metal tolerant species to become locally abundant. Macroinvertebrate densities increased two orders of magnitude between stations 3 (above the Warm Springs Ponds) and 4 (below the Warm Springs Ponds). This increase was attributed a significant reduction in heavy-metal toxicity which allowed a few macroinvertebrate and zooplankton populations to take advantage of the abundant food supply, elevated water temperatures, and constant flows at the outflow of the ponds. Significantly higher densities at stations 10 (Table 1) were interpreted as heavy-metal tolerant species responding to organic enrichment. Macroinvertebrate densities were relatively high throughout the Clark Fork River and were comparable to densities reported from nutrient-rich reaches of the Missouri River (McGuire 1983a and b).



Macroinvertebrate biomass (Figure 6)

Biomass trends were similar to those for abundance and implicated sewage treatment plants upstream of stations 1 and 10 and the paper mill above station 22 as point sources of organic enrichment. However, widespread enrichment was indicated by the high, relatively uniform biomass at mainstem stations. The largest biomass was recorded at station 13 (below the confluence of Rock Creek) where a large number of large Pteronarcys californica nymphs were collected.

3.3 Biocenoses

Orders

Ordinal data is well suited to detect metal pollution. At the ordinal level, species richness and relative abundance exhibit predictable, graduated responses to heavy-metal pollution (Hynes 1960; Wiederholm 1984). Numerous investigators have reported differential tolerances to heavy-metals among invertebrate groups with tolerance increasing from mayflies thru caddisflies to midges (e.g Armitage 1980; Winner et al. 1980).

In this study, since ordinal and functional group analyses were compromised by the lack of seasonal data, a detailed examination was not undertaken. Winner et al. (1980) emphasized the necessity of seasonal sampling to adequately characterize community structure. However, the severity of heavy-metal toxicity in Silver Bow Creek and a progressive improvement downstream to approximately station 13 was clearly indicated by the number of stonefly, mayfly and caddisfly taxa at each station (Table 3). Ordinal relative abundance (Table 4) and relative biomass (Table 5) confirmed the magnitude of heavy-metal toxicity in Silver Bow Creek, but provided no further insights with regard to water quality.

Functional groups

Among functional groups, collectors, primarily filter feeders such as hydropsychids and blackflies, dominated the August fauna. At stations below the Warm Springs Ponds (ACM settling ponds), hydropsychids and blackflies comprised, on the average, 64% of the fauna. The abundance of filter-feeding insects is influenced by the quality and quantity of fine particulate organic matter (Wallace and Merrit 1980) and was indicative of high seston levels throughout the Clark Fork River.



Dominant taxa

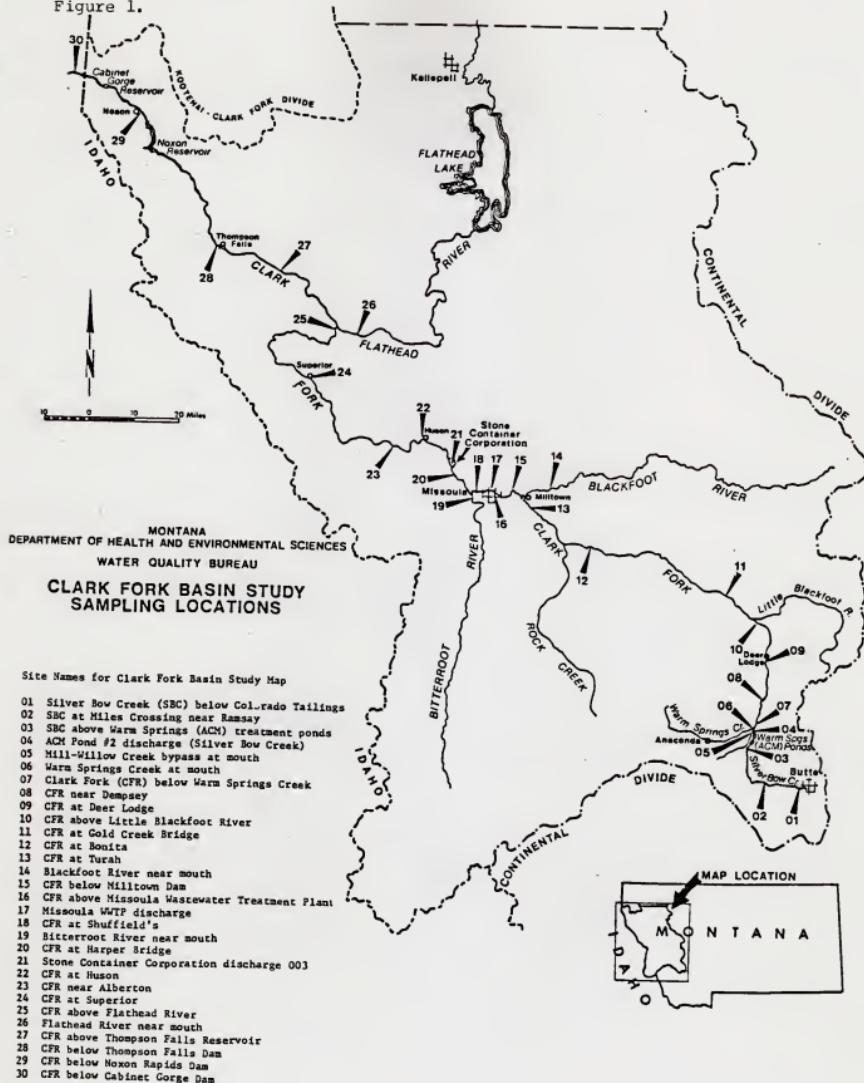
In addition to hydropsychids and blackflies, several other taxa were abundant in the summer fauna. Chironomidae were major components of the benthic fauna in all river reaches. Orthocladiinae which were abundant throughout the river, predominated in Silver Bow Creek and the upper Clark Fork River while several species of the subfamily Chironominae were abundant from Turah (station 13) downstream. Baetis (primarily B. tricaudatus and B. insignificans) were the dominant mayflies at all stations upstream of the Clark Fork River's confluence with the Flathead River. Below the Flathead River, heptageniids (mostly Stenonema sp.) and Paraleptophlebia bicornuta were the most abundant mayflies. Other mayfly species are known to be more abundant seasonally (Hornig and Hornig 1985).

Many taxa exhibited interesting distribution and abundance patterns which may entail useful information about water quality. For example, Arctopsyche grandis was not collected at stations (1-4 and 7-9 and only two specimens at station 10) where copper concentrations frequently exceeded E.P.A. criteria (G. Ingman, WQB, personal communication), but was common at other stations. At stations where moderate environmental stresses were detected (stations 7 through 12, 20 and 22), Hydropsyche (Hydropsyche) spp. (which included some H. occidentalis and many small larvae identifiable only to subgenus) was the most numerous taxa while other hydropsychids were dominant at the remaining stations (Cheumatopsyche sp. and H. morosa at station 4; Cheumatopsyche spp. at stations 23 through 28; and H. cockerelli at stations 15, 16 and 18). However, more frequent sampling would be required to ascertain if these observations reflect life history characteristics or responses to environmental conditions.

Although only superficially examined in this study, the macroinvertebrate fauna in the Clark Fork River below the confluence of the Flathead River differed substantially from upstream reaches. In addition to changes in the mayfly and dipteran biocenoses, seven genera of molluscs (six gastropods and a fingernail clam) were present in the lower reaches of the river that were rare or absent further upstream. Since these organisms are intolerant to copper, their distribution in the Clark Fork River may be limited by copper contamination. Gastropods may thus be useful as indicator organisms and test specimens for *insitu* bioassays.



Figure 1.





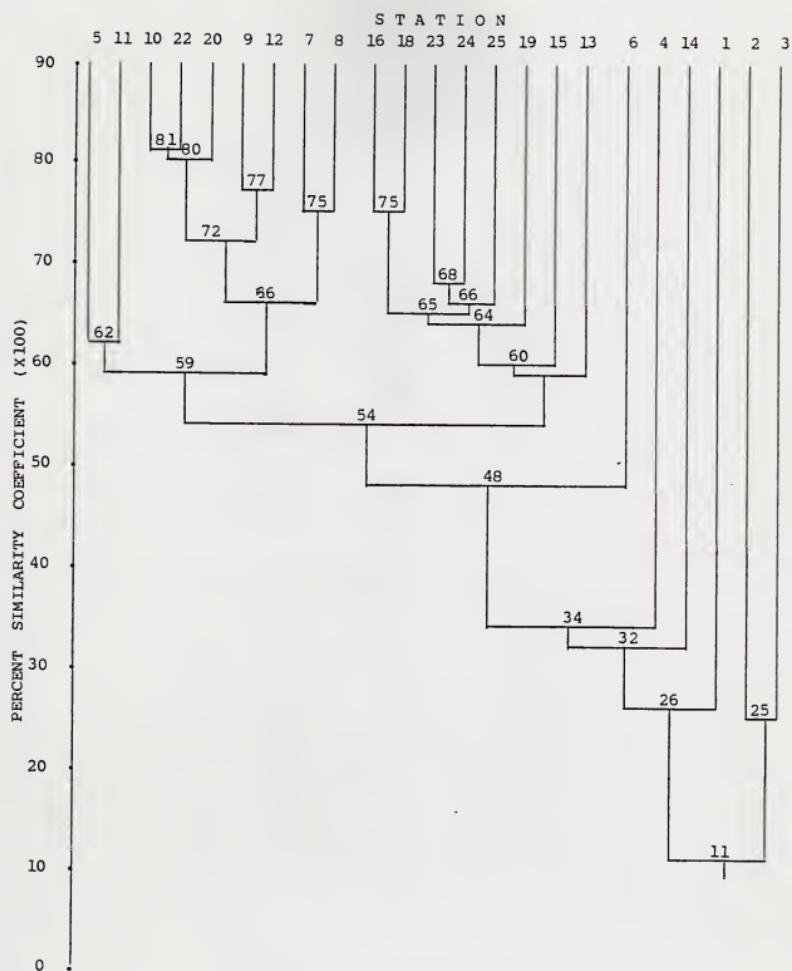
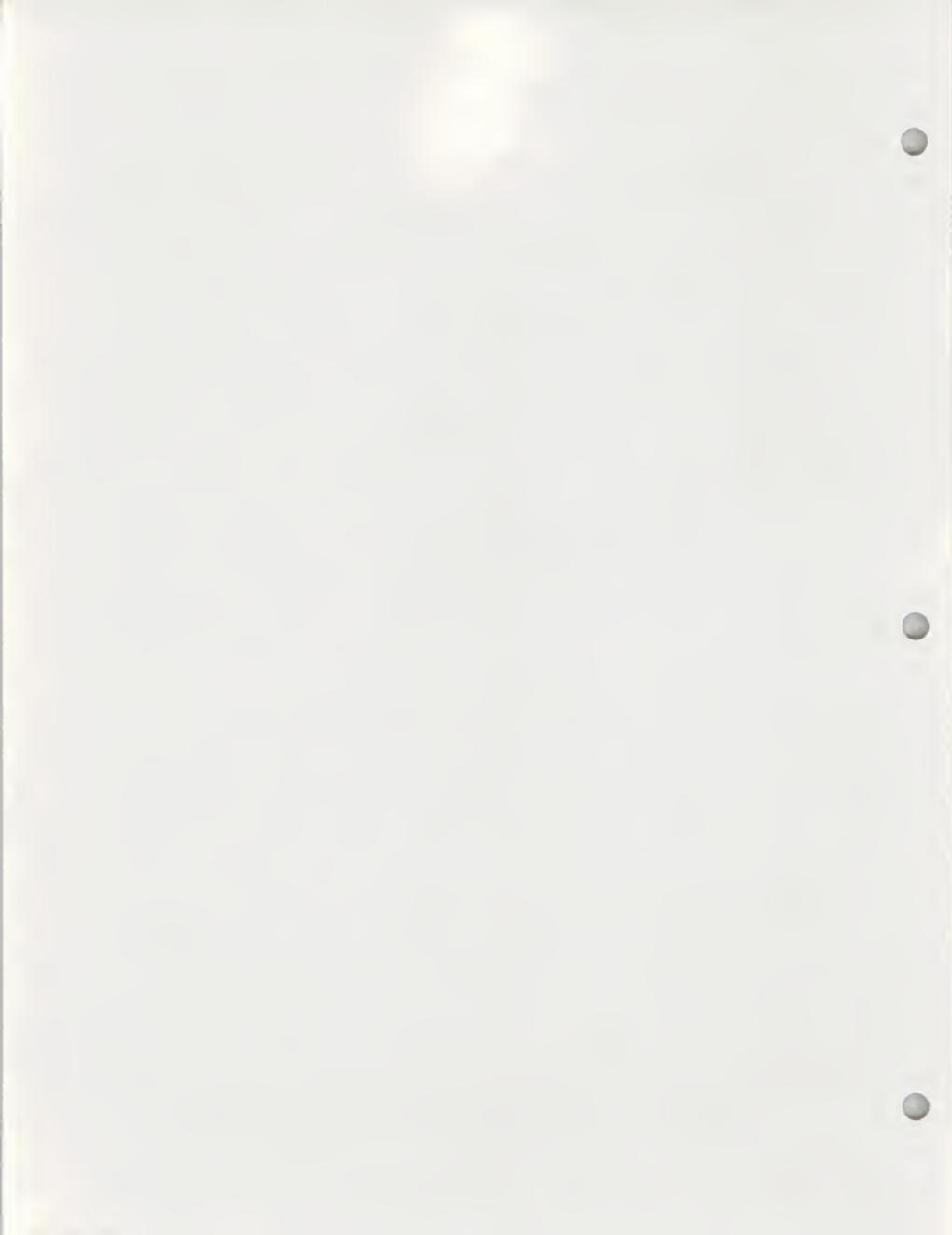


Figure 2. Cluster analysis using the percentage similarity coefficient (X100) for stations in the Clark Fork River drainage during August, 1986.



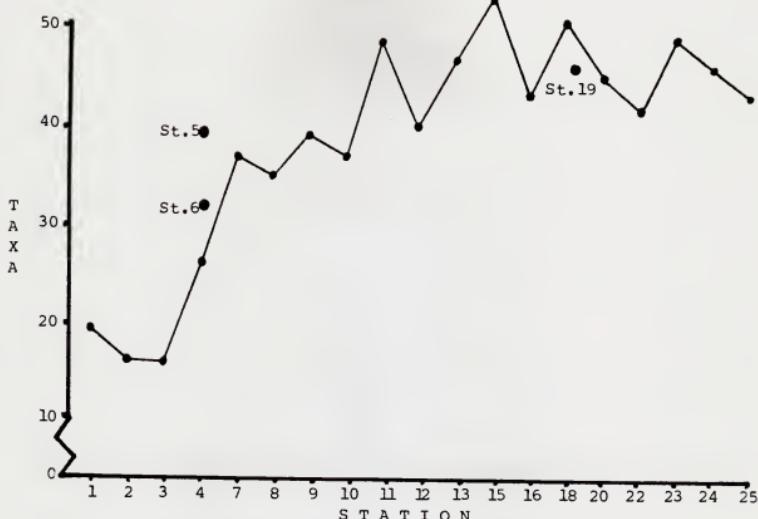


Figure 3. Macroinvertebrate taxa richness at Clark Fork River stations during August, 1986 (four Hess samples pooled at each station).

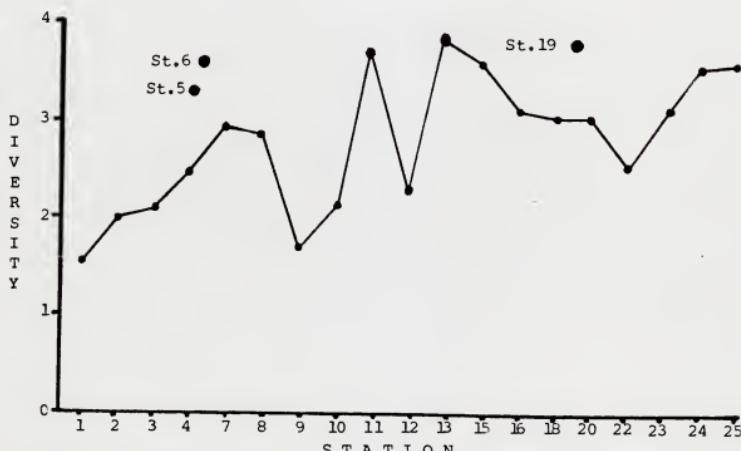
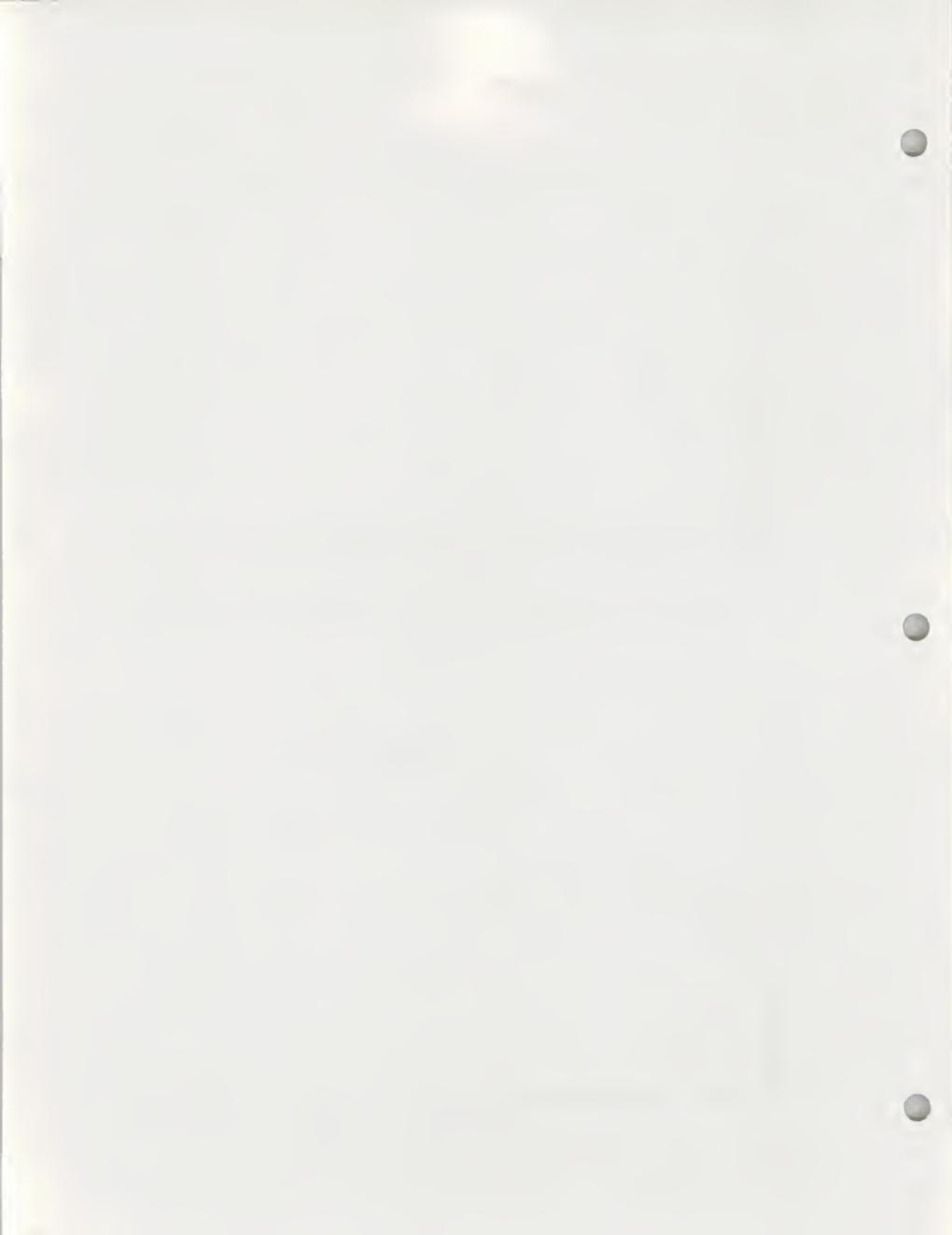


Figure 4. Shannon diversity at Clark Fork River stations during August, 1986 (four Hess samples pooled at each station).



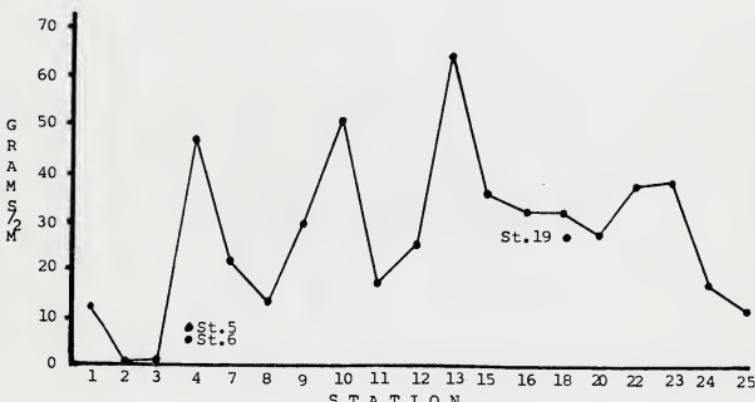
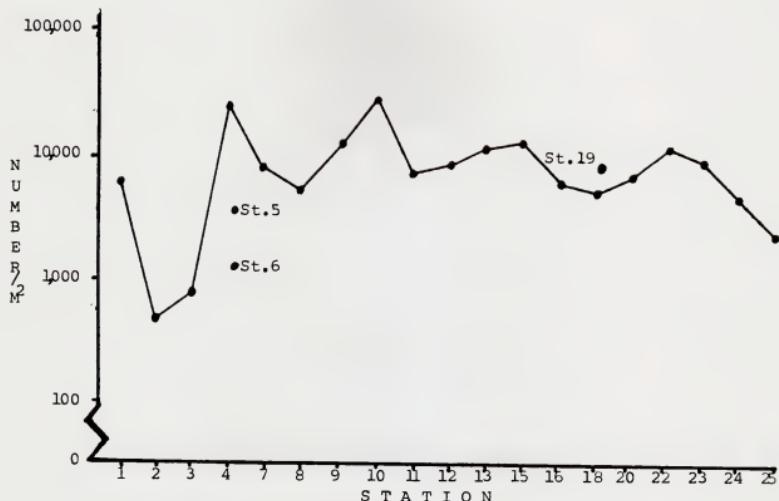


Figure 6. Mean macroinvertebrate biomass (grams wet weight per square meter) at Clark Fork River stations during August, 1986.

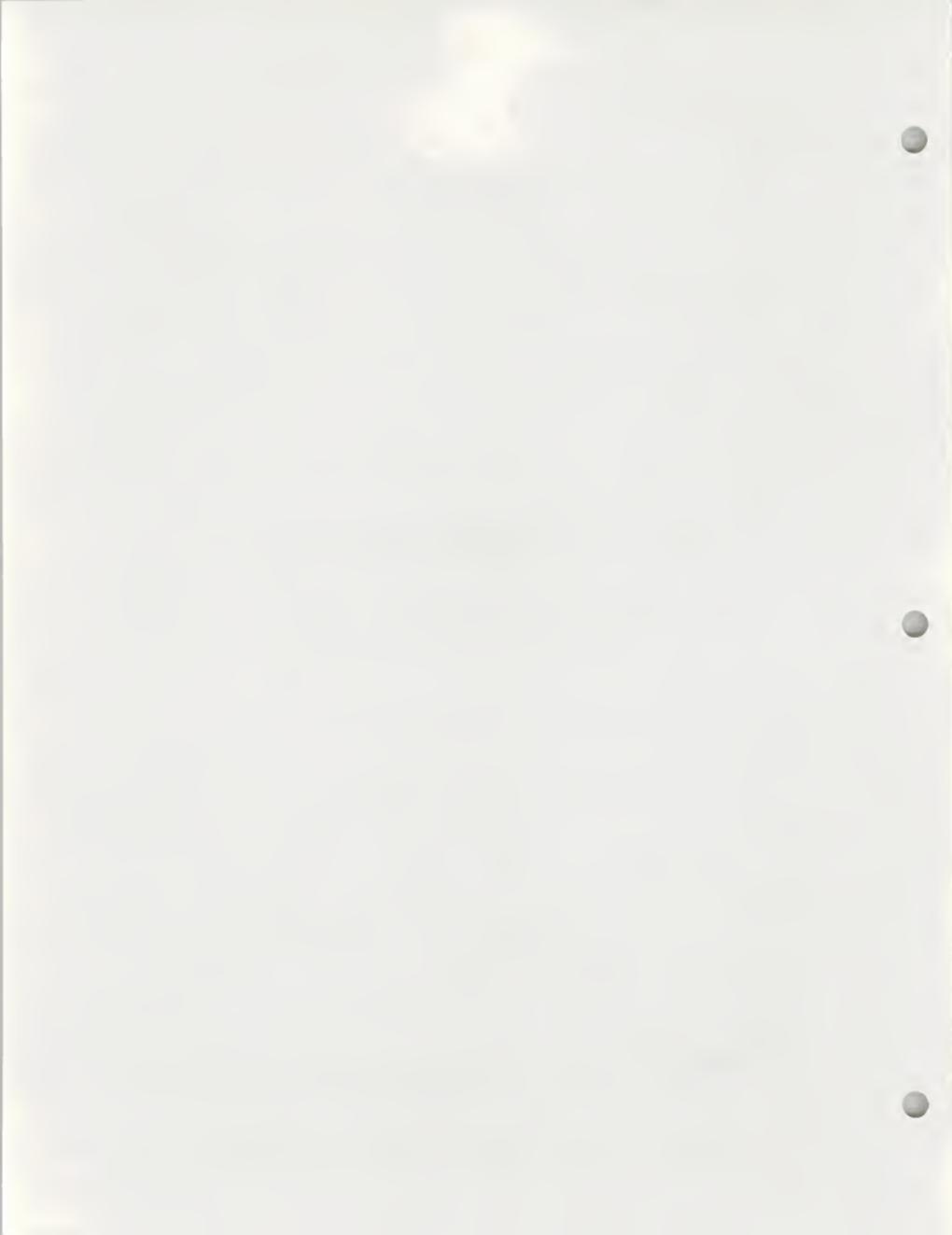


Table 1. Statistical analyses (Kruskal-Wallis test and multiple range test based on ranks) of taxa richness, Shannon diversity, community density and community biomass at 22 stations in the Clark Fork River drainage during August, 1986 (Four replicate Hess samples at each station; ANOVA [$P=0.01, 21df$] = 38.93).

		INDICE		
		Taxa richness	diversity	density
ANOVA				biomass
H =		70.79**	72.46**	68.69**
MULTIPLE RANGE TEST				
Station	Mean No. of taxa	mean diversity	organisms/ sq. meter	grams/ sq. meter
1	8 a	1.35	6280 b	12.9 c
2	8 a	1.68 a	478 a	0.6 a
3	8 a	2.03 a	823 a	1.4 a
4	18 b	2.40	25580 c	48.1 d,e
5	25 c	3.21 b	3573	7.7 b
6	18 b	3.33 b	1220	6.8 b
7	26 c	2.88 b	8470 b	23.5 c,d
8	22 c	2.73	5893 b	14.1 c
9	25 c	1.74	14095 b	30.2 c,d,e
10	26 c	2.13 a	31308 c	51.3 e
11	29 c	3.23 b	8385 b	18.8 c
12	28 c	2.25 a	9485 b	26.3 c,d,e
13	34 d	3.69	15385 b	65.1 e
15	36 d	3.60 b	14300 b	36.4 c,d,e
16	28 c	2.93 b	6925 b	33.2 c,d,e
18	30 c	2.92 b	5838 b	32.7 c,d,e
19	34 d	3.60 b	8895 b	28.7 c,d,e
20	30 c	2.89 b	8098 b	29.2 c,d,e
22	29 c	2.52	13960 b	38.4 d,e
23	36 d	3.08 b	9895 b	39.7 d,e
24	33 d	3.46 b	5365 b	17.0 c
25	26 c	3.40 b	2490	8.3 b

means followed by common letters were not significantly different at $P = 0.05$ level.



Table 2. The number of taxa per order at 27 stations in the Clark Fork drainage during August, 1986 (four Hess samples pooled at each station except 26, 27, 28 and 30, where kick samples were collected).

STATION	ORDER						Total
	Diptera	Trich.	Ephem.	Pleco.	Coleo.	Other	
1	12	1	1	0	4	0	18
2	8	1	1	0	4	1	15
3	5	4	0	0	3	3	15
4	9	6	0	0	2	8	25
5	16	9	5	3	3	2	38
6	11	7	3	3	6	0	30
7	16	7	2	3	4	4	36
8	14	6	3	3	5	3	34
9	18	7	3	4	4	2	38
10	16	8	5	3	3	1	36
11	23	9	7	5	3	1	48
12	19	7	8	2	3	0	39
13	18	9	10	6	3	0	46
15	20	10	9	7	4	2	52
16	13	11	6	5	3	4	42
18	19	8	10	6	3	3	49
19	18	8	8	4	4	3	45
20	19	7	9	5	3	1	44
22	15	9	7	5	3	2	41
23	17	11	9	6	3	2	48
24	17	11	8	4	3	2	45
25	15	11	11	1	2	2	42
26	6	3	5	0	2	4	20
27	15	7	9	2	4	11	48
28	7	3	4	0	0	1	15
30	11	6	4	0	0	5	26



Table 3. The percentage relative abundance (X100) of macroinvertebrate orders in the Clark Fork River drainage during August, 1986 (four Hess samples pooled at each station except 26, 27, 28 and 30, where kick samples were collected).

STATION	ORDER					
	Diptera	Trich.	Ephem.	Pleco.	Coleo.	Other
1	100	+	+	0	+	0
2	82	5	1	0	8	4
3	27	59	0	0	12	2
4	23	47	0	0	3	27
5	34	45	16	2	2	1
6	9	22	20	35	14	0
7	9	60	7	10	12	2
8	9	61	10	8	12	+
9	9	74	11	2	4	+
10	28	60	9	2	1	+
11	33	33	26	6	1	+
12	13	64	18	3	2	0
13	39	43	10	4	4	0
15	38	46	7	6	3	+
16	13	76	7	1	2	1
18	10	76	9	4	+	1
19	19	56	9	5	10	1
20	19	58	20	2	1	+
22	18	65	13	2	2	+
23	6	75	13	2	1	3
24	16	68	11	1	1	3
25	21	65	6	3	1	4
26	9	21	52	0	7	11
27	28	38	14	+	5	15
28	64	14	12	0	0	10
30	30	10	57	0	0	3

+ indicates less than 1%

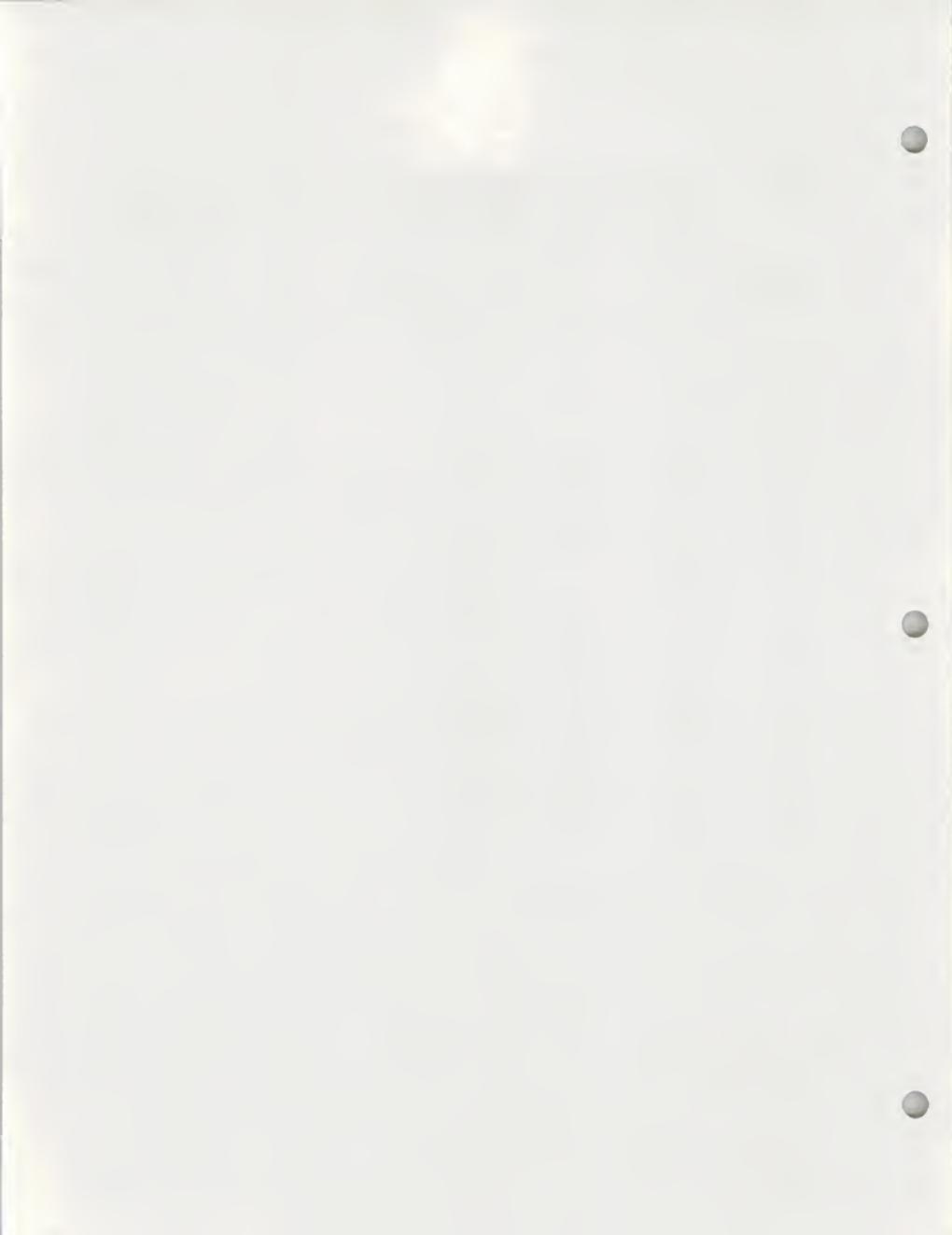


Table 4. The percentage relative biomass (X100) of macroinvertebrate orders in the Clark Fork River drainage during August, 1986 (four Hess samples pooled at each station).

STATION	ORDER					
	Diptera	Trich.	Ephem.	Pleco.	Coleo.	Other
1	100	+	+	0	+	0
2	72	12	+	0	16	0
3	16	65	0	0	19	+
4	23	42	0	0	2	34
5	20	60	14	6	+	+
6	6	8	4	80	3	0
7	6	55	4	31	4	+
8	9	53	4	27	6	1
9	8	75	5	10	1	1
10	18	61	8	14	+	0
11	17	50	7	26	1	0
12	31	48	6	15	1	0
13	10	36	3	50	1	0
15	9	55	2	32	1	+
16	2	68	1	27	+	0
18	1	75	2	21	+	+
19	5	71	4	11	7	2
20	8	77	6	9	+	+
22	10	65	5	19	1	+
23	1	85	5	7	+	2
24	4	75	4	12	+	5
25	4	78	4	8	+	6

+ indicates less than 1%.



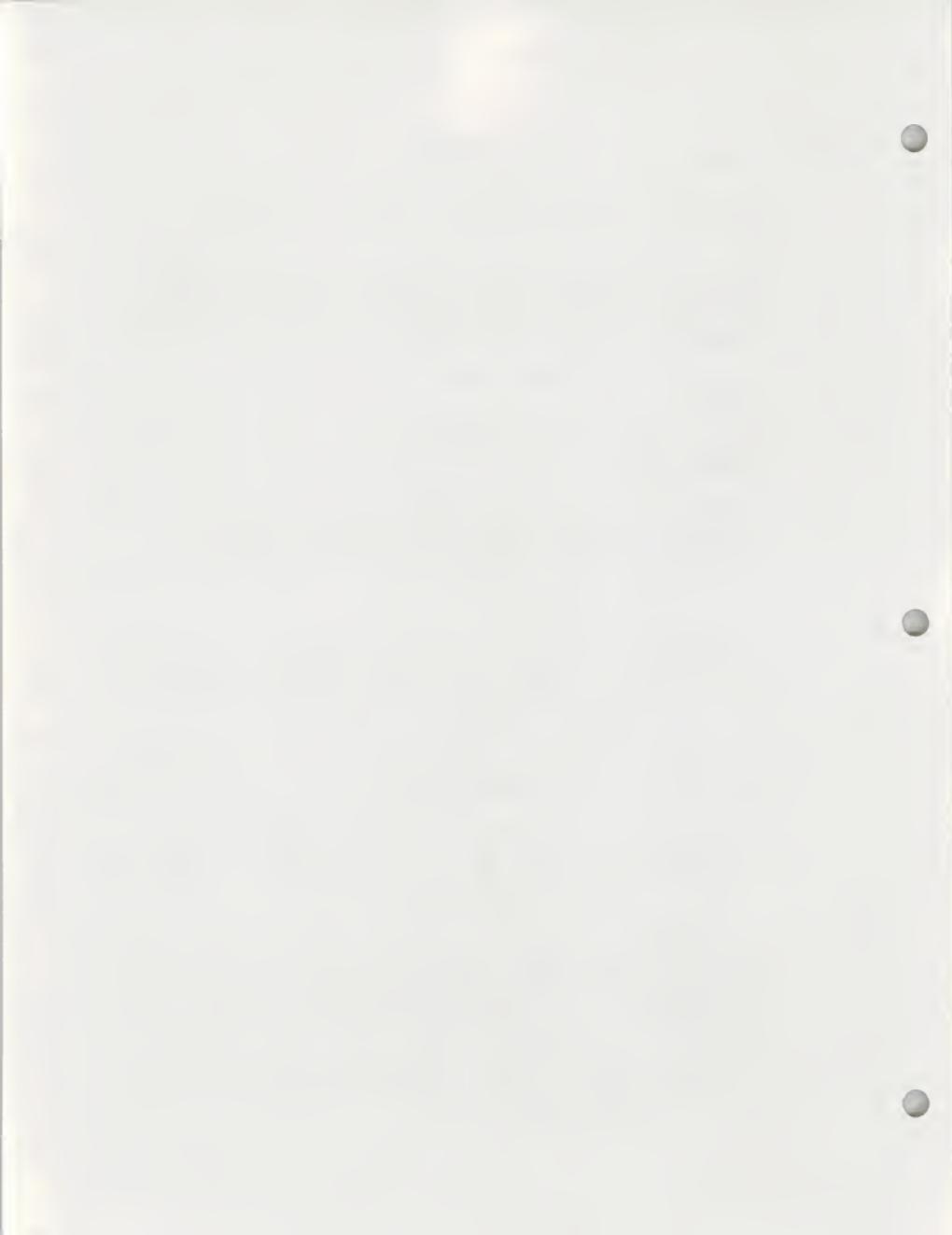
4.0 CONCLUSIONS

Four main conclusions may be drawn from the 1986 macroinvertebrate date:

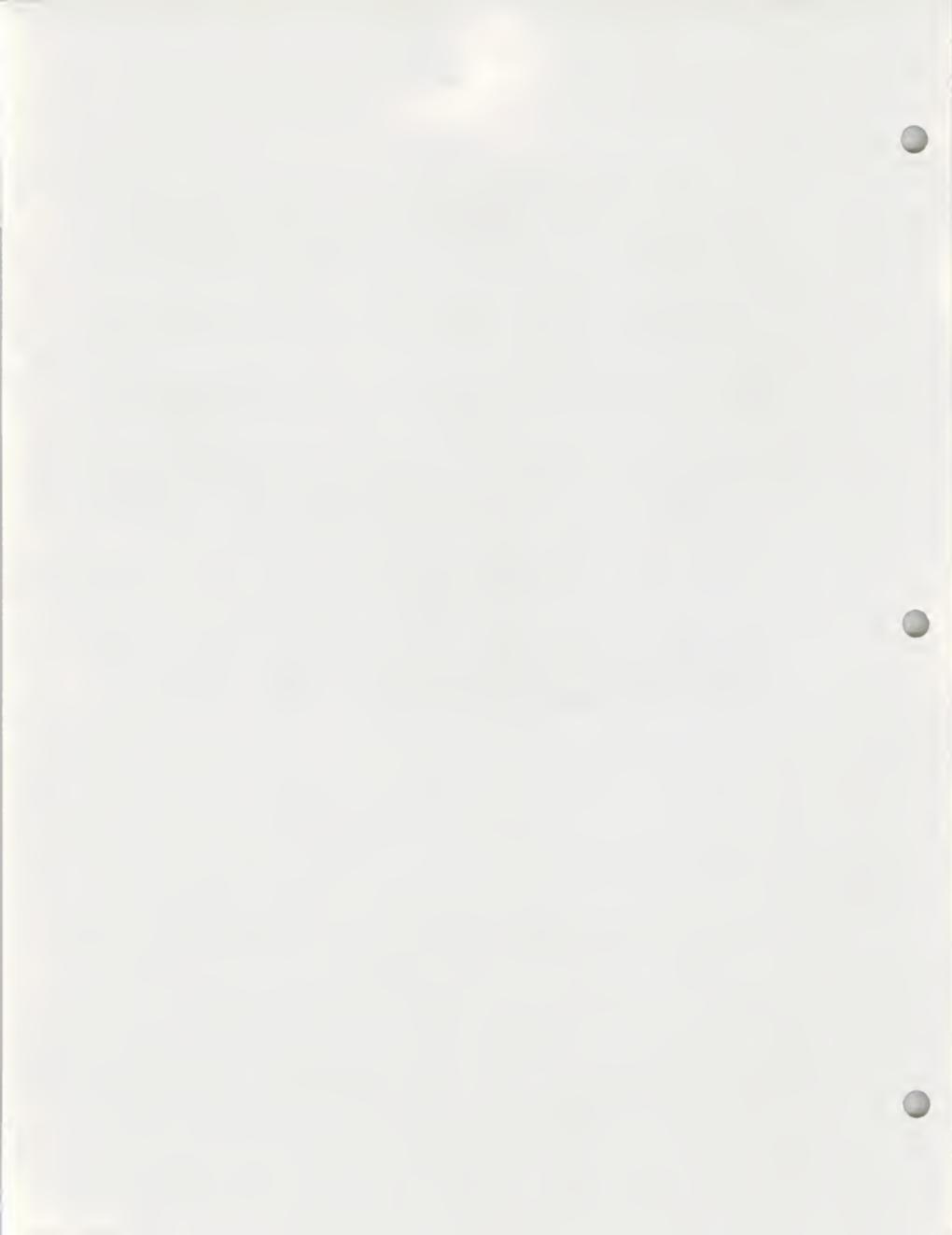
1. Macroinvertebrates were sensitive to toxic conditions in the Clark Fork River drainage. A relative measure of the biological significance of heavy-metal contamination was provided by an integrated evaluation of species richness, abundance, community composition and diversity.
2. Silver Bow Creek remains severely polluted with heavy-metals.
3. Moderate heavy-metal contamination was indicated in the Clark Fork River above the confluence of Rock Creek (stations 7-12).
4. The relatively high densities and large biomass of macroinvertebrates indicated nutrient and organic enrichment throughout the Clark Fork River and, except where suppressed by heavy-metals, in Silver Bow Creek.

Site specific conclusions:

5. At station 1 (Silver Bow Creek below the Colorado tailings), a relative increase in the abundance of blackflies and midges suggested organic enrichment and a localized reduction in toxic conditions by dilution and/or complexing of metals by the Butte sewage treatment plant effluent.
6. At stations 2 and 3 in Silver Bow Creek, toxic conditions resulted in an impoverished macroinvertebrate fauna which consisted of a few tolerant species present in low numbers.
7. A substantial reduction in heavy-metal toxicity occurred in and below the Warm Springs settling ponds. A significant increase in the number of taxa was attributed to the effects of liming, settling of metal-bearing sediments and dilution by Mill, Willow and Warm Springs creeks.
8. At station 4, immediately below the settling ponds, order of magnitude increases in macroinvertebrate abundance and biomass resulted from the cumulative effects of many favorable environmental factors. In the less toxic environment, a few macroinvertebrate and zooplankton populations flourished, responding to an abundant food supply, elevated water temperatures and constant flows. Although their influence was diminished with distance, these factors had a detectable impact on macroinvertebrates at stations 7 and 8 in the upper Clark Fork River.



9. Multiple environmental stresses were apparent from station 7 to 12 on the upper Clark Fork River. Varying degrees of heavy-metal toxicity and nutrient enrichment were indicated at each station. Organic enrichment was particularly evident at station 10 (CFR above the L. Blackfoot River).
10. At station 11, (CFR at Gold Creek) a localized reduction in toxicity may have been indicated, however, it did not extend downstream to station 12 (CFR at Bonita).
11. Below the confluence of Rock Creek (station 13, CFR at Turah) all parameters indicated a substantial reduction in the biological significance of heavy-metal contamination.
12. Significant environmental stresses were not apparent at station 15 below Milltown Dam. Macroinvertebrates were not, however, as abundant as expected below a shallow impoundment on a nutrient rich river, suggesting that productivity in the reservoir may be limited by metal-laden sediments.
13. No differences were detected between stations above (16) and below (18) the Missoula sewage treatment outfall.
14. Relatively high macroinvertebrate density and biomass at stations 22 (CFR at Huson) and 23 (CFR near Alberton) were attributed to the cumulative effects of enrichment from upstream sources, including the Missoula sewage treatment plant and the Frenchtown paper mill.



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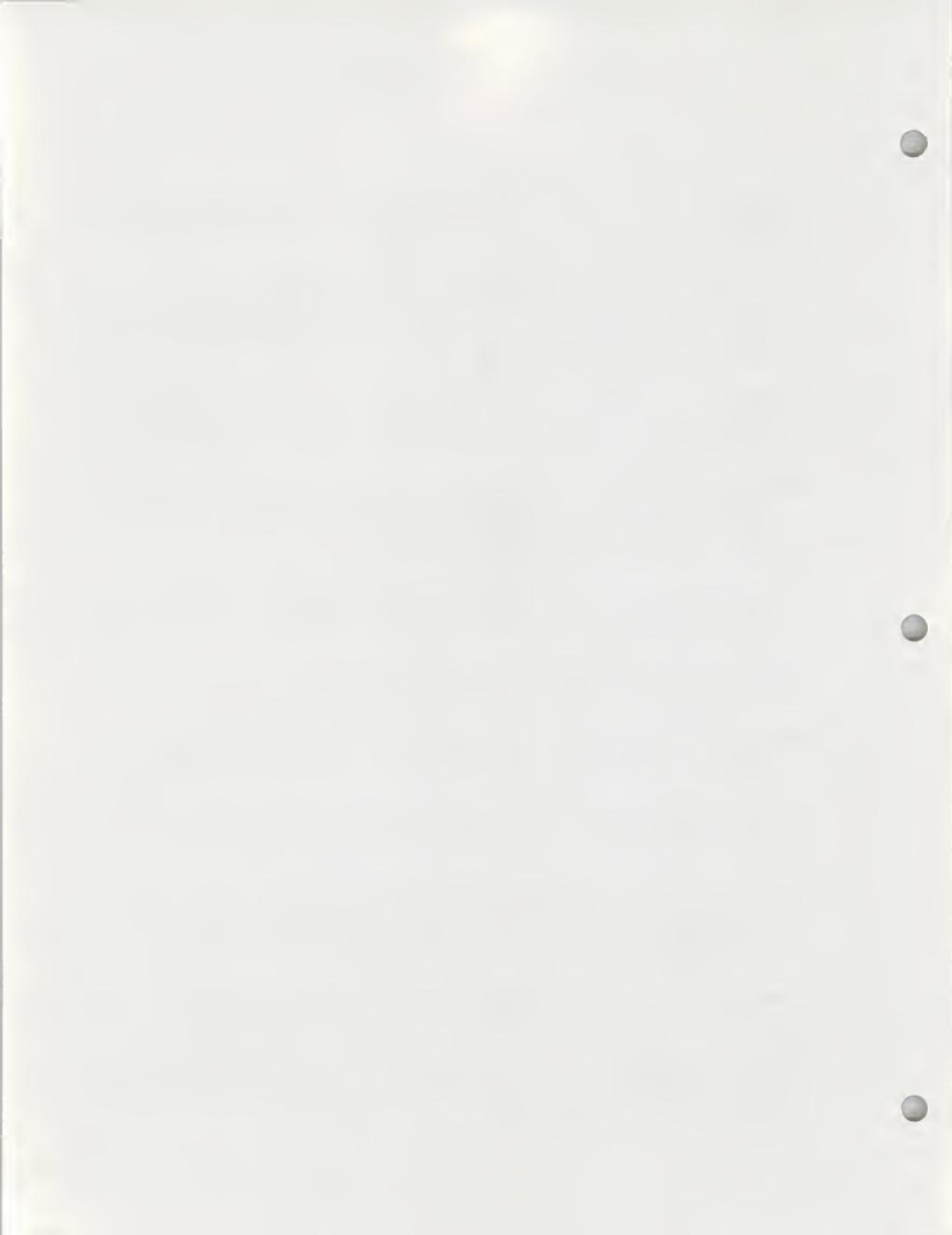
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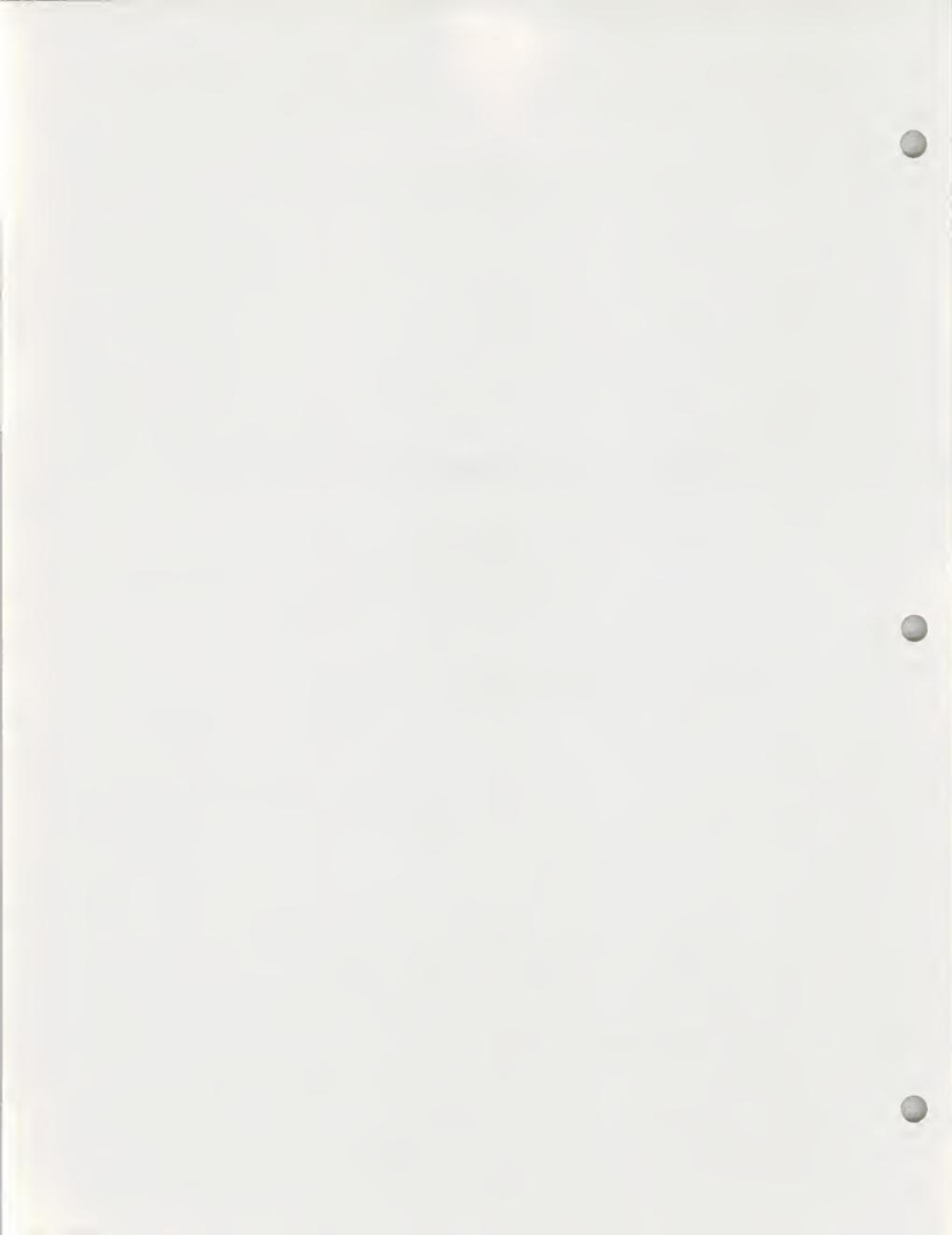
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CLARK FORK RIVER MACROINVERTEBRATE STUDY, 1986

APPENDICES



APPENDIX A

A checklist of macroinvertebrates identified in samples collected from the Clark Fork River drainage, Montana, during August 1986.

TAXON

Arthropoda

Arahnida

HYDROCARINA

Crustacea

CLADOCERA

AMPHIPODA

Talitridae

Hyalella azteca

Insecta

EPHEMEROPTERA

Siphlonuridae

Ameletus sp.

Baetidae

Baetis bicaudatus

Baetis insignificans

Baetis tricaudatus

Psuedocloeon sp.

Heptageniidae

Epeorus albertae

Epeorus longimanus

Heptagenia soltaria

Nixe sp.

Rhithrogena sp. (some R. hageni)

Stenonema sp.

Ephemerellidae

Attenella margarita

Drunella grandis

Drunella doddsi

Ephemerella inermis/infrequens

Serratella tibialis

Timpango hecuba

Tricorythidae

Tricorythodes minutus

Leptophlebiidae

Paraleptophlebia bicornuta

ODONATA

Gomphidae

Ophiogomphus sp.



PLECOPTERA

Pteronarcidae

Pteronarcella badia
Pteronarcys californica

Perlidae

Claassinia sabulosa
Doroneuria theodora
Hesperoperla pacifica

Perlodidae

Isogenoides sp.
Skwala sp.

Chloroperlidae

Chloroperlinae (unidentified)
Sweltsa sp.

HEMIPTERA

Corixidae (immature)

MEGALOPTERA

Sialidae

Sialis sp.

TRICHOPTERA

Philopotamidae

Normaldia sp.

Psychomyiidae

Psychomyia flavida

Polycentropididae

Polycentropus sp.

Hydropsychidae

Arctopsyche grandis

Cheumatopsyche spp.

Hydropsyche

(Ceratopsyche) sp.1

(Ceratopsyche) sp.2

(Ceratopsyche) sp.3

(Hydropsyche) spp.

Rhyacophilidae

Rhyacophila acropedes

Rhyacophila sp.1

Glossosomatidae

Agapetus sp.

Glossosoma sp.

Hydroptilidae

Hydroptila spp.

Luecotrichia sp.

Ochrotrichia sp.

Zumatrictchia notosa

Brachycentridae

Brachycentrus sp. (small larvae at upstream sites)

Brachycentrus occidentalis



TRICHOPTERA (continued)

Limnephilidae

Dicosmoecus sp.

Helicopsychidae

Helicopsyche borealis

Leptoceridae

Ceraclea sp. 1

Ceraclea sp. 2

Oecetis sp.

Mystacides sp.

LEPIDOPTERA

Pyralidae

Petrophilia sp. (=Paragyractis)

COLEOPTERA

Halipidae

Brychius sp.

Haliplus sp.

Dytiscidae

Agabus sp.

Deronectes sp.

Oreodytes sp. 1

Oreodytes sp. 2

Hydrophilidae

Hydrophilus sp.

Elmidae

Cleptelmis ornata

Dubiraphia sp.

Heterlimnius sp.

Narpus concolor

Optioservus quadrimaculatus/seriatus

Optioservus divergins/pecosensis

Promoresia (?) sp.

Zaitzevia parva

DIPTERA

Tipulidae

Antocha sp.

Hexatoma sp.

Tipula sp.

Culicidae

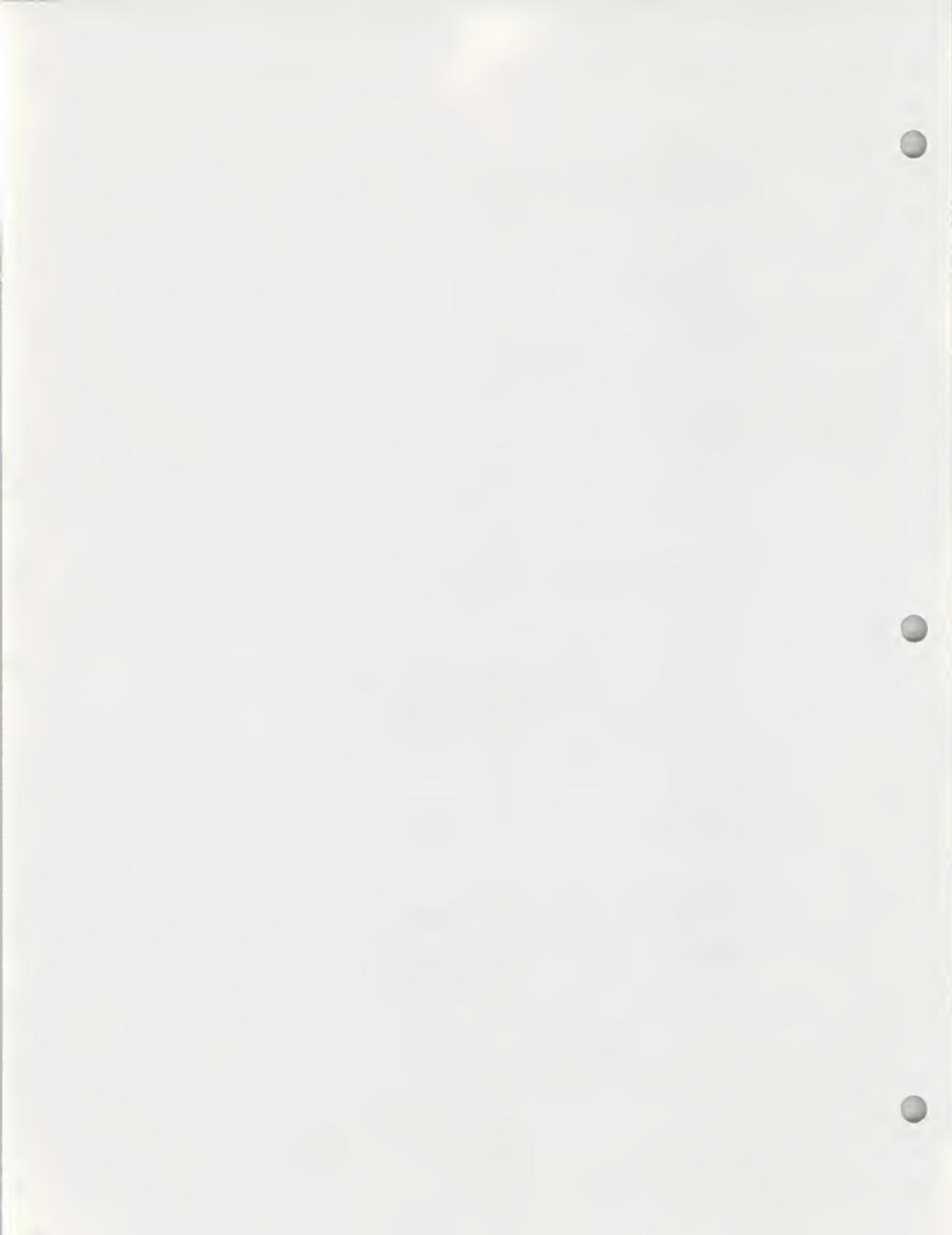
Aedes sp.

Ceratopogonidae

Ceratopogoninae (Palpomyia complex)

Simuliidae

Simulium spp.



DIPTERA (continued)

Chironomidae

Tanypodinae

Apsectrotanytarsus sp.

Pentaneura (?) sp.

Thienemannimyia sp.

Thienemannimyia group

Diamesinae

Pagastia sp.

Potthastia gaedii group

Potthastia longimana group

Prodiamesinae

Monodiamesa sp.

Odontomesa sp.

Orthocladiinae

Cardiocladius spp.

Corynoneura sp.

Cricotopus

(Cricotopus) bicinctus group

(C.) tremulus group (spp.)

(C.) trifascia gp

(C.) or Orthocladius (O.)

(Isocladius) sylvestris group

(Nostococladus)

Eukiefferiella

brehmi group

claripennis group (spp)

coeruleescens group

gracei group

Nanocladius parvulus group

Orthocladius sp.

(Orthocladius) spp.

(Eudactocladius) sp.

(Euorthocladius) sp.

Paraphaenocladius sp.

Parametriocnemus sp.

Synorthocladius sp.

Thienemanniella sp.

Tvetenia spp.

Chironominae

Chironomini

Cryptochironomus sp.

Dicrotendipes sp.

Glyptotendipes species group A (Wiederholm 1983)

Microtendipes pedellus group

Paracladopelma sp.

Parachironomus frequens group

Phaenopsectra sp.

Polypedilum spp.

Pseudochironomus sp.

Tanytarsini

Cladotanytarsus vanderwulpi group

Micropsectra sp.

Rheotanytarsus sp.

Tanytarsus sp.



~~DETERMINED~~ (continued)

Protanyderus sp.

Athericidae

Atherix pachypus

Empididae

Chelifera sp.

unidentified Empididae

Muscidae

Limnophora sp.

Annelida

Oligochaeta

Enchytraeidae

Lumbricidae

Lumbriculidae

Tubificidae

Limnodrilus hoffmeisteri

tubificid (unidentified)

Niadidae

Ophiodonais serpentina

Hirudinea

Erobtdellidae

Glossophoniidae

Mollusca

Gastropoda

Ancyclidae

Ferrissia sp.

Lymnaeidae

Lymnaea sp.

Physidae

Physa sp.

Planorbidae

Gyraulus sp.

Helisoma sp.

Pelecypoda

Sphaeriidae

Sphaerium sp.

Platyhelminthes

Turbellaria

Porifera

Demospongiae

Spongillidae

Phylum

Class

ORDER

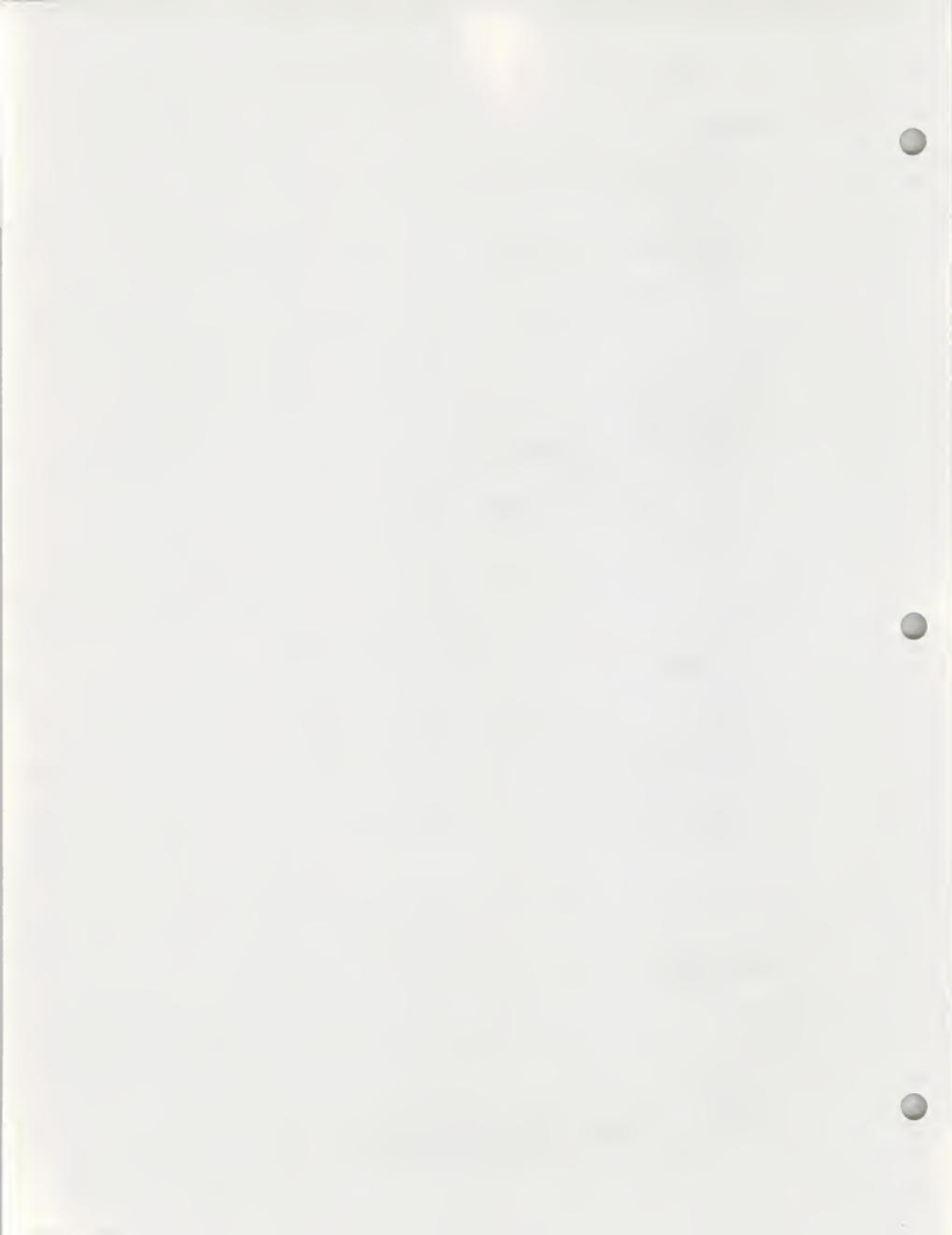
Family

Subfamily

Tribe

Genus species or species group

(subgenus) species or species group



APPENDIX B

Taxonomic references used to identify macroinvertebrates
collected during August, 1986 from the Clark Fork River

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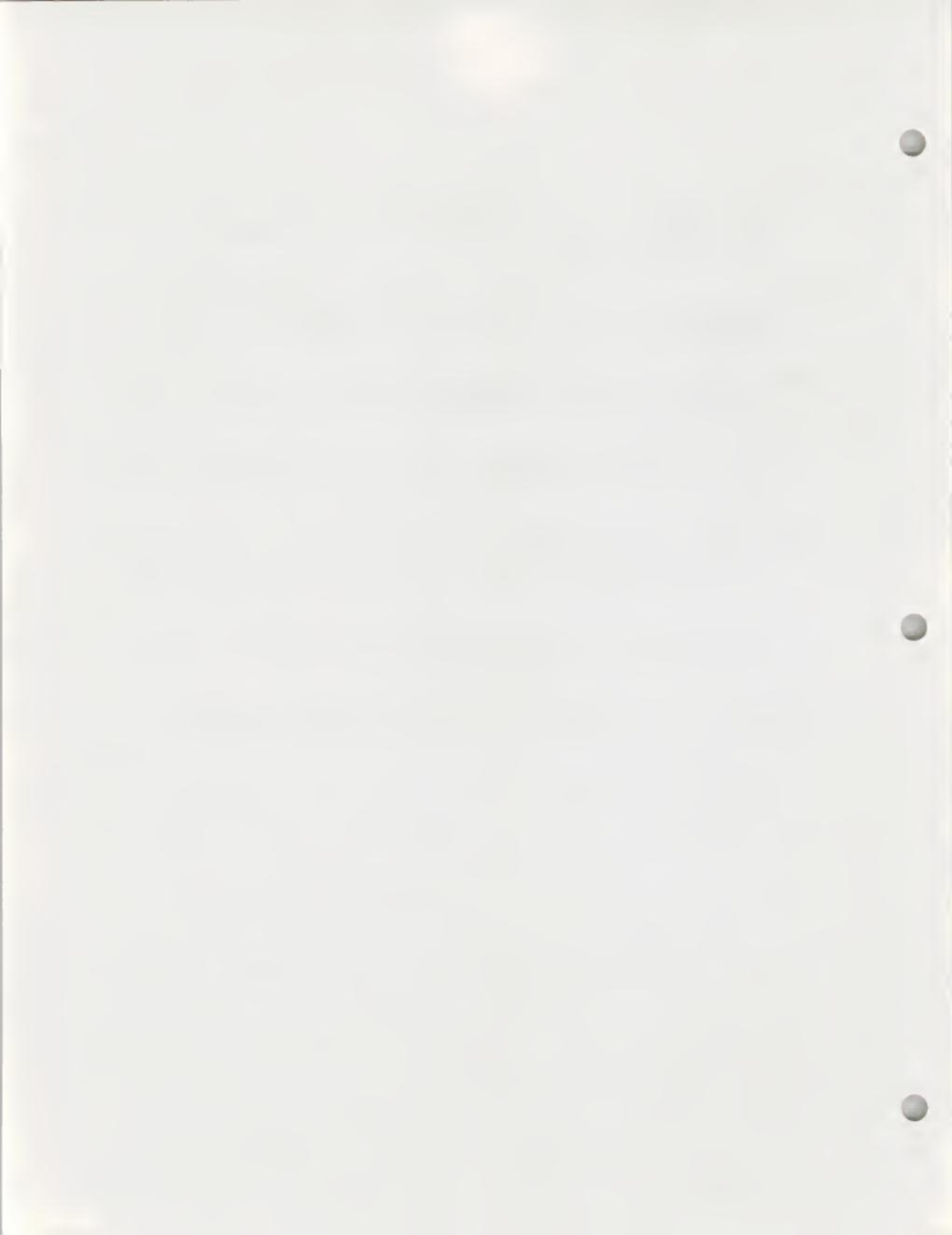
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APPENDIX C

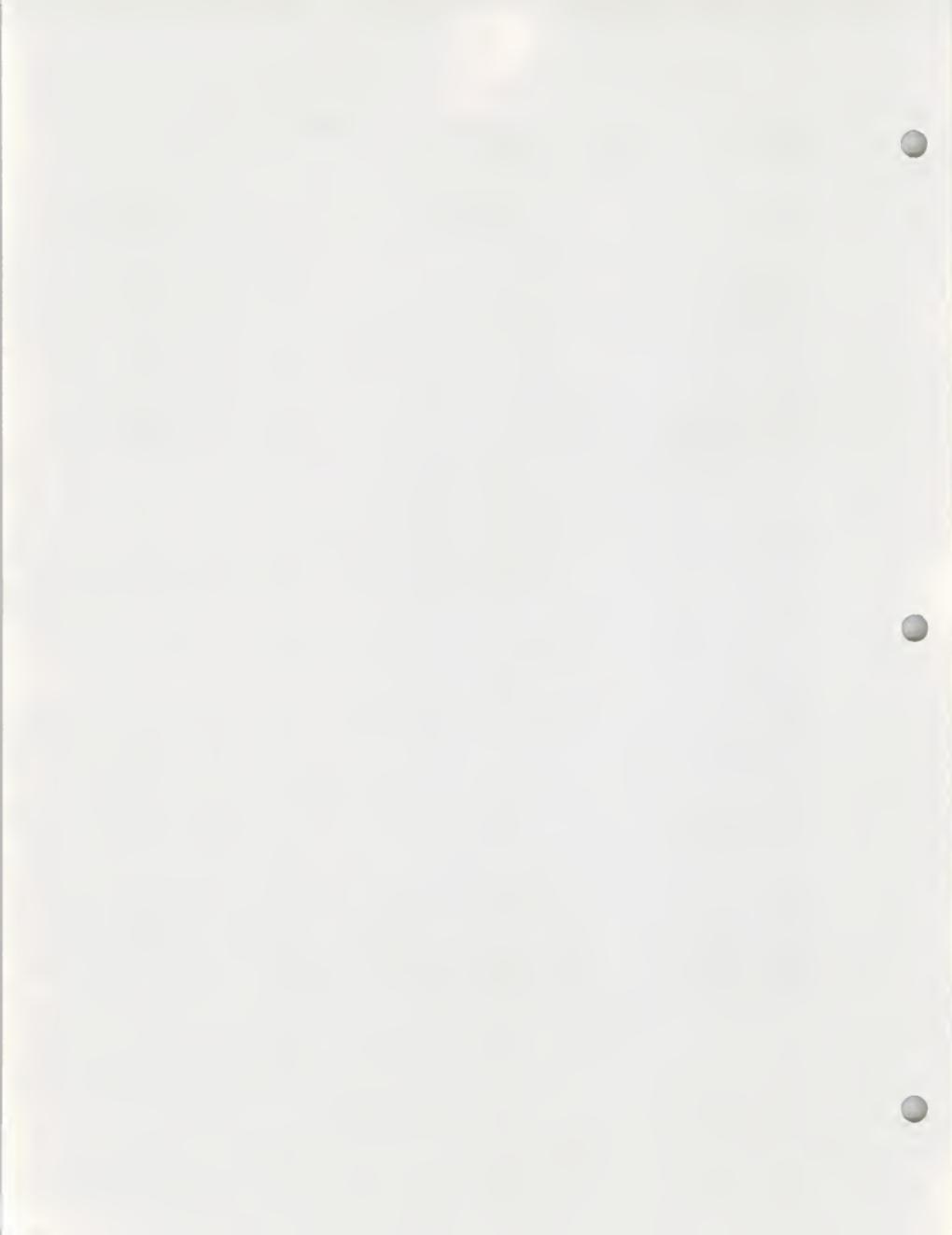
CLARK FORK RIVER MACROINVERTEBRATE STUDY
NUMERICAL DATA AND SUMMARY STATISTICS



CLARK FORK RIVER MACROINVERTEBRATE DATA

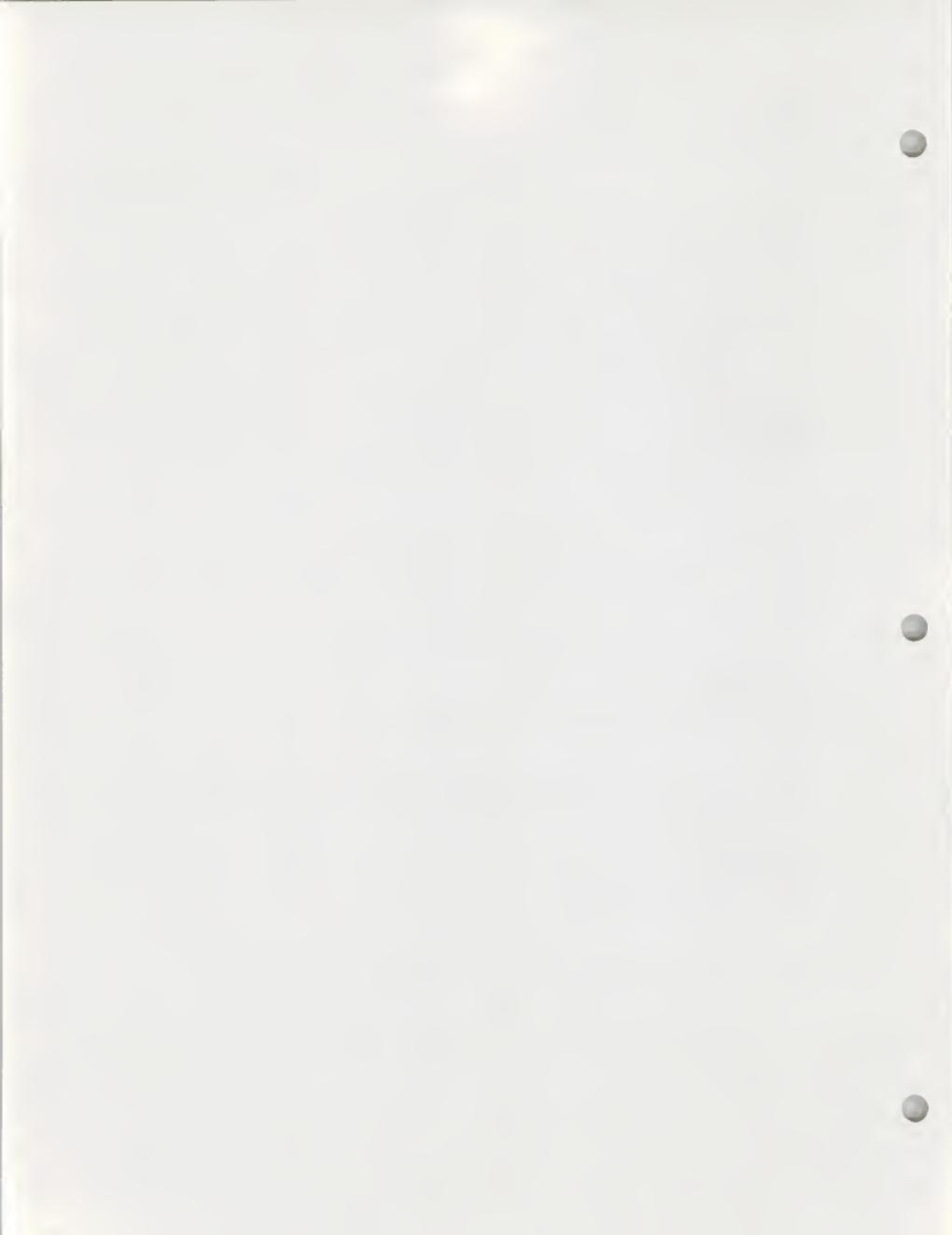
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 DATE: August 11, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
<hr/>								
DIPTERA								
unassoc. chiron pupa	9	0	0	5	14	100	6280	
Aedes sp.	0	1	0	0	1	0	3	5
Apsectrotanypus sp.	0	0	1	0	1	0	3	5
Cardiocladius sp.	3	4	27	24	58	2	145	128
Chelifera sp.	0	0	2	0	2	0	5	10
Cricotopus								
(C.) tremelus group	313	77	70	464	924	37	2310	1921
(I.) sylvestris grp	49	9	8	143	209	8	523	634
Dicrotendipes sp.	0	0	0	1	1	0	3	5
Eukiefferiella								
claripennis group	3	1	0	13	17	1	43	60
Orthocladius								
(Orthocladius) sp.	0	0	0	1	1	0	3	5
Pagastia sp.	0	0	1	0	1	0	3	5
Simulium spp.	156	225	350	543	1274	51	3185	1698
Thienemannimyia sp.	2	0	0	1	3	0	8	10
EPHEMEROPTERA								
Drunella sp.	0	0	0	1	1	0	3	5
COLEOPTERA								
Brychius sp.	0	1	0	0	1	0	10	
Deronectes sp.	0	1	0	0	1	0	3	5
Optioservus								
quadrimaculatus	0	0	1	0	1	0	3	5
Zaitzevia parva	0	0	1	0	1	0	3	5
TRICHOPTERA								
Hydropsyche						0	3	
(Ceratopsyche) sp.2	0	0	0	1	1	0	3	5
<hr/>								
TOTAL NUMBER	535	319	461	1197	2512	100	6280	3898
TOTAL TAXA	6	8	9	10	19		8	2
S.W. DIVERSITY	1.40	1.18	1.17	1.64	1.57		1.35	0.22
EQUITABILITY	0.55	0.34	0.30	0.40	0.20		0.40	0.11
BIOTIC INDEX					3.41			
BIOTIC CONDITION INDEX					49			



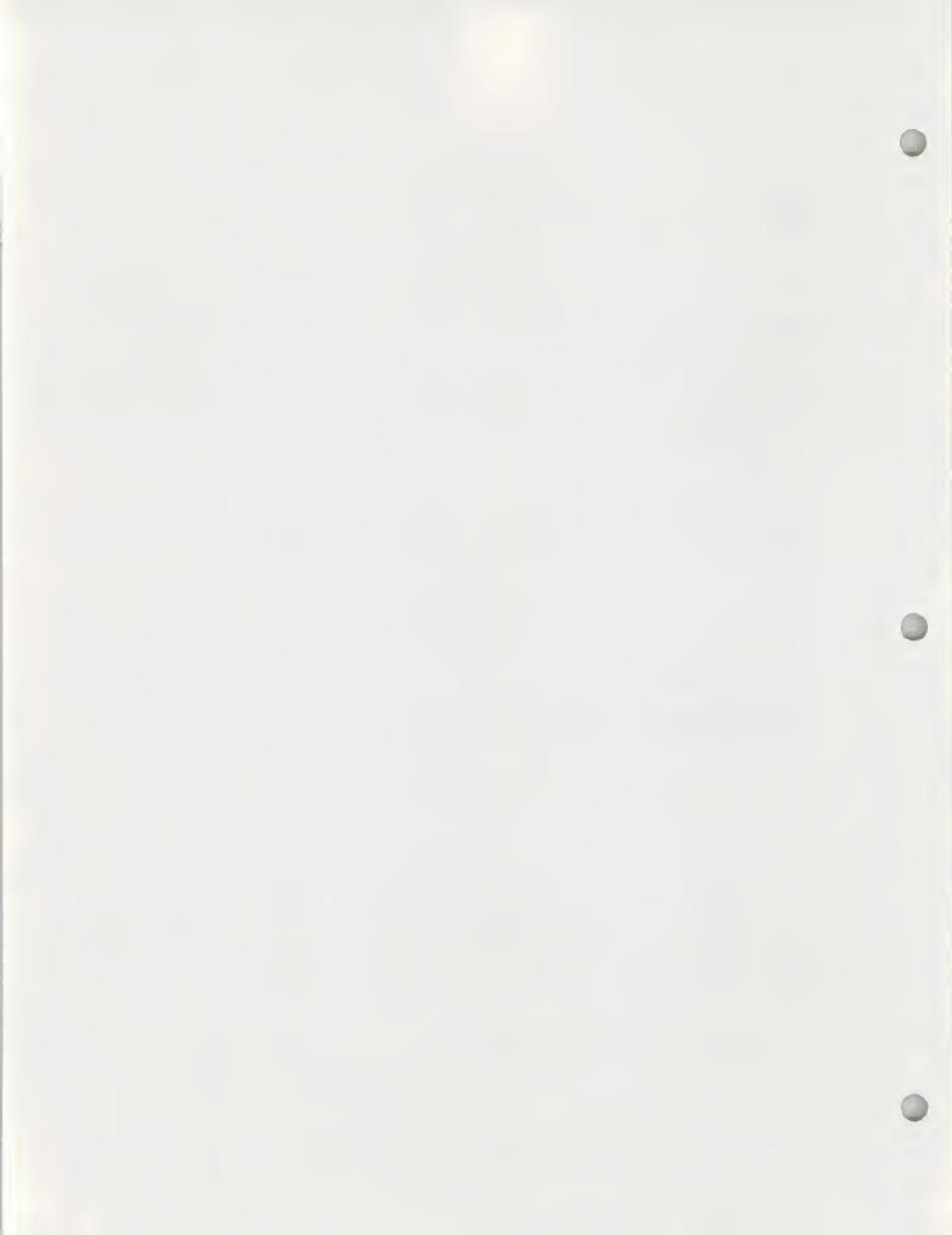
STATION: 2 (Silver Bow Creek near Ramsey)
 DATE: August 11, 1986
 SAMPLE TYPE: modified Hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	0	0	0	1	1	1	3	5
Antocha sp.	0	1	0	0	1	1	3	5
Apsectrotanypus sp.	0	0	0	2	2	1	5	10
Cardiocladius sp.	32	11	50	34	127	66	318	160
Chelifera sp.	0	0	3	0	3	2	8	15
Cricotopus								
(C.) tremelus group	2	3	3	0	8	4	20	14
Eukiefferiella								
gracei group	1	0	0	0	1	1	3	5
Limnophora sp.	0	2	0	0	2	1	5	10
Pagastia sp.	1	1	8	1	11	6	28	35
EPHEMEROPTERA								
Baetis tricaudatus	0	0	1	0	1	1	3	5
COLEOPTERA								
Agabus sp.	0	1	0	0	1	1	3	5
Deronectes sp.	2	6	2	0	10	5	25	25
Haliplus sp.	0	1	0	0	1	1	3	5
Optioservus								
quadrimaculatus	1	0	1	1	3	2	8	5
TRICHOPTERA								
Hydropsyche								
(Ceratopsyche) sp.2	4	2	4	0	10	5	25	19
HYDRACARINA								
	0	1	8	0	9	5	23	39
<hr/>								
TOTAL NUMBER	43	29	80	39	191	100	478	223
TOTAL TAXA	7	10	9	4	16		8	3
S.W. DIVERSITY	1.43	2.71	1.95	0.64	2.00		1.68	0.87
EQUITABILITY	0.48	0.91	0.56	0.45	0.33		0.60	0.21
BIOTIC INDEX					3.00			
BIOTIC CONDITION INDEX					50			



STATION: 3 (Silver Bow Creek @ frontage road)
 DATE: August 11, 1986
 SAMPLE TYPE: modified Hess

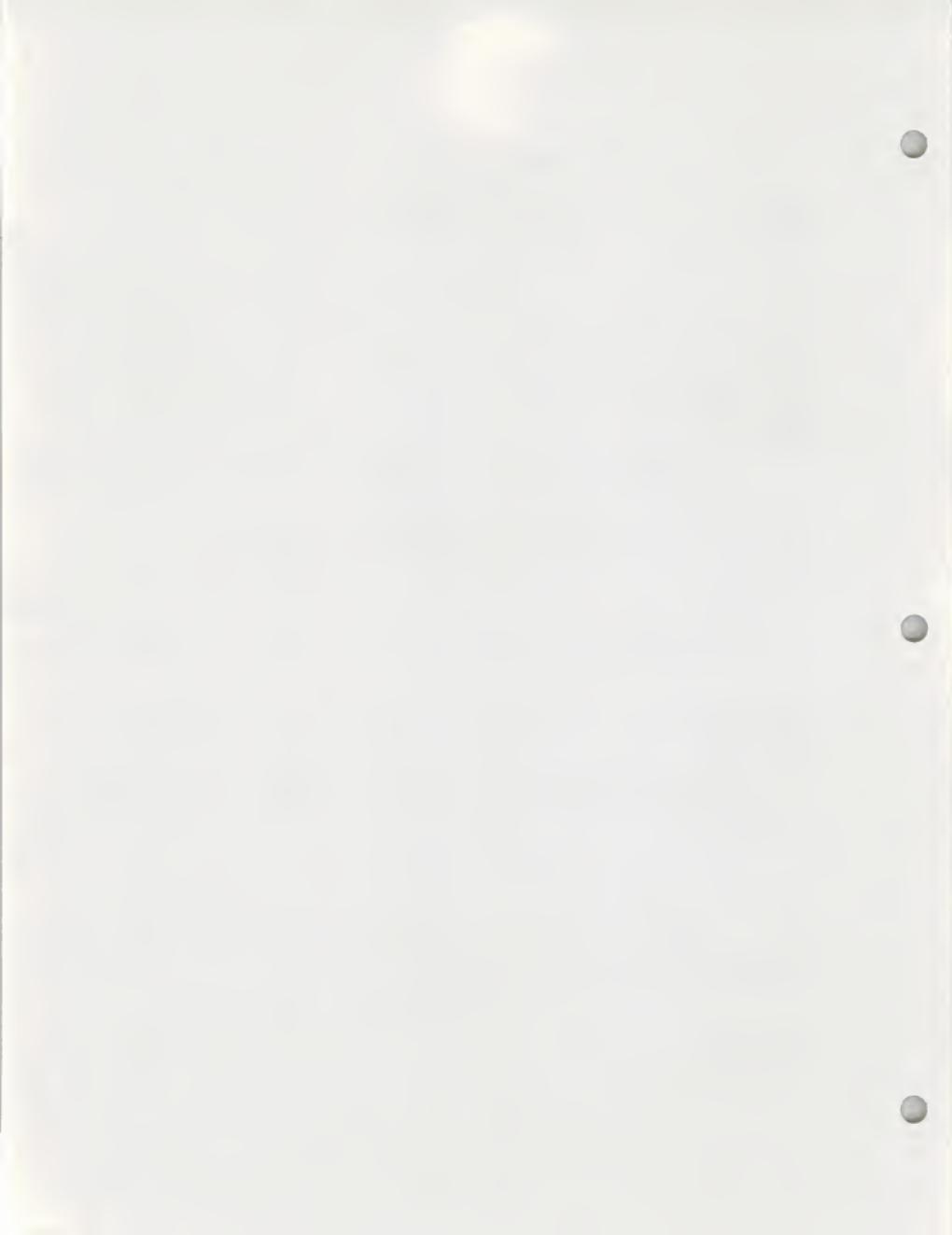
TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D			#/m ²	DEV
DIPTERA								
Chironomidae pupa	1	1	0	1	3	1	8	5
Atherix pachypus	0	0	1	0	1	0	3	5
Cardiocladius sp.	7	16	5	8	36	11	90	48
Pagastia sp.	3	13	26	5	47	14	118	104
Simulium sp.	0	2	0	0	2	1	5	10
Thienemannimyia sp.	1	0	0	0	1	0	3	5
COLEOPTERA								
Optioservus						12	103	
quadrimaculatus	0	4	2	0	6	2	15	19
Oreodytes sp.1	13	10	6	5	34	10	85	37
Zaitzevia parva	0	1	0	0	1	0	3	5
MEGALOPTERA								
Sialis sp.	0	1	0	0	1	0	3	5
TRICHOPTERA								
Brachycentrus sp.1	0	1	0	1	2	1	5	6
Cheumatopsyche sp.	0	1	0	1	2	1	5	6
Hydropsyche								
(Ceratopsyche) sp.1	0	5	3	2	10	3	25	21
(Ceratopsyche) sp.2	10	70	85	16	181	55	453	378
AMPHIPODA								
Hyallela azteca	1	0	0	0	1	0	3	5
HYDRACARINA								
	0	0	1	0	1	0	3	5
<hr/>								
TOTAL NUMBER	36	125	129	39	329	100	823	517
TOTAL TAXA	6	11	8	7	16		8	2
S.W. DIVERSITY	2.11	2.15	1.58	2.27	2.11		2.03	0.31
EQUITABILITY	0.95	0.54	0.47	0.93	0.36		0.72	0.25
BIOTIC INDEX					2.95			
BIOT. COND. INDEX					51			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 4 (A.C.M. pond 2 discharge - SBC)
 DATE: August 11, 1986
 SAMPLE TYPE: modified hess

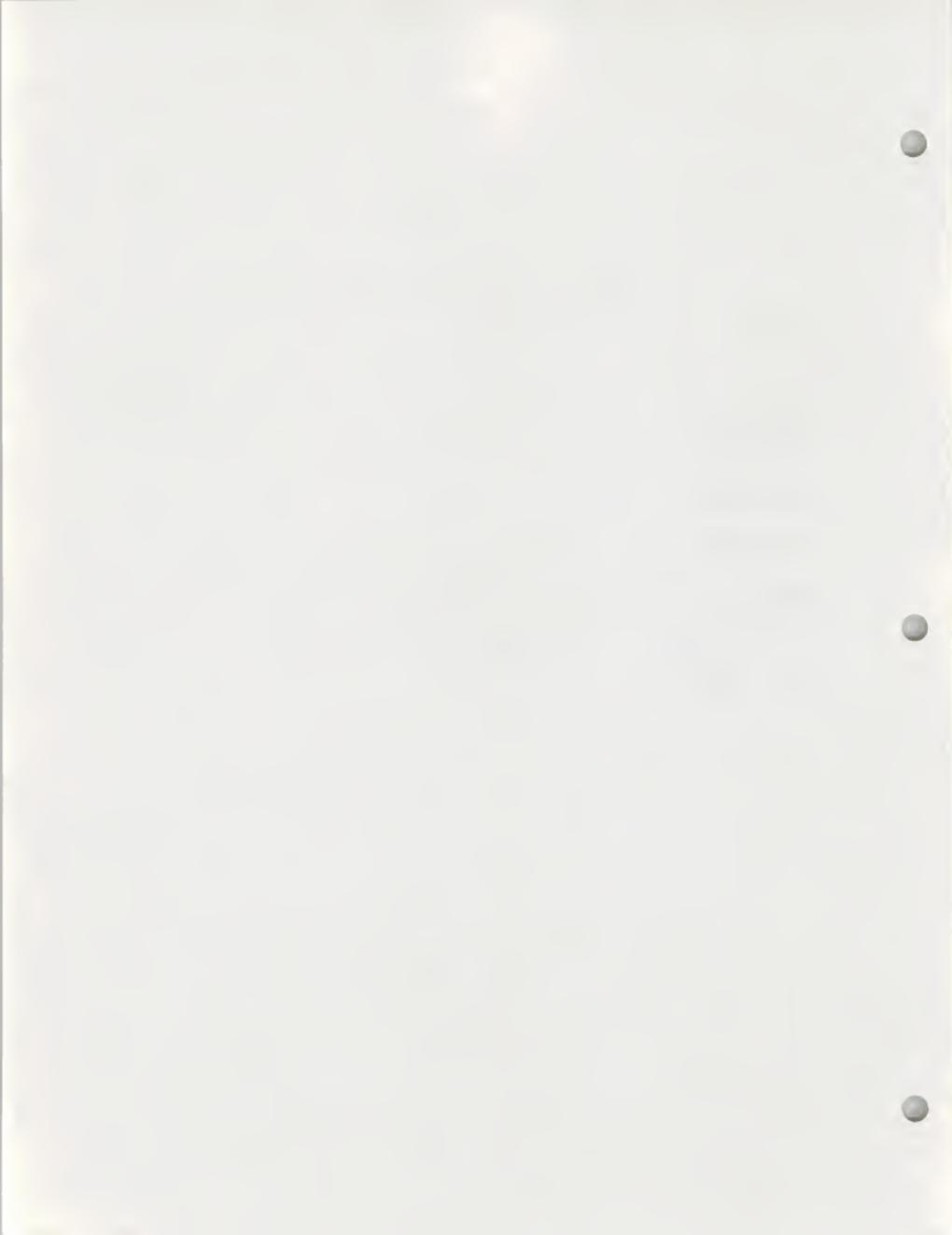
TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	22	12	6	13	53	1	133	66
Antocha sp.	5	4	1	3	13	0	33	17
Atherix pachypus	3	6	5	3	17	0	43	15
Cardiocladius sp.	12	0	0	3	15	0	38	57
Cricotopus								
(C.)/Orthocladius	39	9	7	12	67	1	168	150
(C.) trifascia gp	79	2	1	11	93	1	233	374
(C.) tremelus gp	6	5	0	0	11	0	28	32
Glyptotendipes								
species group A	4	7	4	1	16	0	40	24
Simulium spp.	1299	345	228	216	2088	20	5220	5213
Tvetenia sp.	1	0	0	0	1	0	3	5
COLEOPTERA								
Optioservus							3	690
divergins/pecosensis	16	8	9	7	40	0	100	41
quadrimaculatus	112	34	43	47	236	2	590	357
TRICHOPTERA								
Cheumatopsyche sp.	1041	310	564	485	2400	23	6000	3126
Hydropsyche								
(Ceratopsyche) sp.2	1	0	1	0	2	0	5	6
(Ceratopsyche) sp.3	655	397	486	544	2082	20	5205	1081
(Hydropsyche) sp.1	118	74	62	25	279	3	698	383
Helicopsyche								
borealis	1	0	0	0	1	0	3	5
Oecetis sp.	2	0	1	0	3	0	8	10
AMPHIPODA								
Hyalella azteca	852	437	643	811	2743	27	6858	1889
GASTROPODA								
Gyraulus sp.	4	0	5	1	10	0	25	24
Physa sp.	6	3	23	7	39	0	98	90
HIRUDINEA								
Erobdellidae	5	3	5	4	17	0	43	10
Glossophoniidae	0	0	3	0	3	0	8	15



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 4 (CONCLUDED)

TAXON	A	B	C	SAMPLE #	D	SUM	%RA	MEAN	STAND
								#/m ²	DEV
HYDRACARINA	1	0	0	0		1	0	3	5
OLIGOCHAETA									
Tubificidae	0	0	0	1		1	0	3	5
TURBELLARIA	0	0	1	0		1	0	3	5
TOTAL NUMBER	4284	1656	2098	2194		10232	100	25580	11743
TOTAL TAXA	22	15	19	17		26		18	3
S.W. DIVERSITY	2.49	2.48	2.39	2.24		2.49		2.40	0.12
EQUITABILITY	0.35	0.51	0.37	0.37		0.30		0.40	0.07
BIOTIC INDEX						3.29			
BIOT. COND. INDEX						49			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 4 (CONCLUDED)

TAXON	A	B	C	SAMPLE #	D	SUM	%RA	MEAN	STAND
								#/m ²	DEV
HYDRACARINA	1	0	0	0		1	0	3	5
OLIGOCHAETA									
Tubificidae	0	0	0	1		1	0	3	5
TURBELLARIA	0	0	1	0		1	0	3	5
<hr/>									
TOTAL NUMBER	4284	1656	2098	2194		10232	100	25580	11743
TOTAL TAXA	22	15	19	17		26		18	3
S.W. DIVERSITY	2.49	2.48	2.39	2.24		2.49		2.40	0.12
EQUITABILITY	0.35	0.51	0.37	0.37		0.30		0.40	0.07
BIOTIC INDEX						3.29			
BIOT. COND. INDEX						49			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 5 (Mill-Willow Creek bypass)
 DATE: August 11, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN #/m ²	STAND DEV
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	1	1	1	0	3	0	8	5
Antocha sp.	3	3	3	1	10	1	25	10
Atherix pachypus	0	3	2	3	8	1	20	14
Cardiocladius sp.	2	2	4	6	14	1	35	19
Cricotopus								
(C.) tremelus gp	0	9	0	8	17	1	43	49
(C.)/Orthocladius	8	2	0	1	11	1	28	36
(N.) nostocladius gp	3	0	5	11	19	1	48	46
Eukiefferiella								
brehmi gp	0	0	2	0	2	0	5	10
claripennis gp	0	0	1	2	3	0	8	10
Hexatoma sp.	1	0	1	0	2	0	5	6
Micropsectra sp.	0	1	0	0	1	0	3	5
Microtendipes sp.								
pedellus gp	5	1	15	22	43	3	108	95
Pagastia sp.	1	12	3	11	27	2	68	56
Phaenopsectra sp.	1	0	0	0	1	0	3	5
Rheotanytarsus sp.	0	0	0	1	1	0	3	5
Simulium sp.	5	74	77	166	322	23	805	660
Tvetenia sp.	1	2	2	2	7	0	18	5
EPHEMEROPTERA								
Baetis tricaudatus	27	77	59	67	230	16	575	216
Epeorus sp.	0	0	0	1	1	0	3	5
Heptageniidae sp. 1	1	0	0	0	1	0	3	5
Drunella grandis	0	0	0	2	2	0	5	10
Tricorythodes								
minutus	0	1	0	0	1	0	3	5
COLEOPTERA								
Optioservus							2	63
quadrimaculatus	2	1	4	8	15	1	38	31
Oreodytes sp.1	1	0	0	1	2	0	5	6
Zaitzevia parva	1	2	3	2	8	1	20	8
PLECOPTERA								
Hesperoperla							1	45
pacificus	0	0	0	1	1	0	3	5
Pteronarcella badia	2	0	1	7	10	1	25	31
Skwala sp.	7	0	3	8	18	1	45	37



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 5 (CONCLUDED)

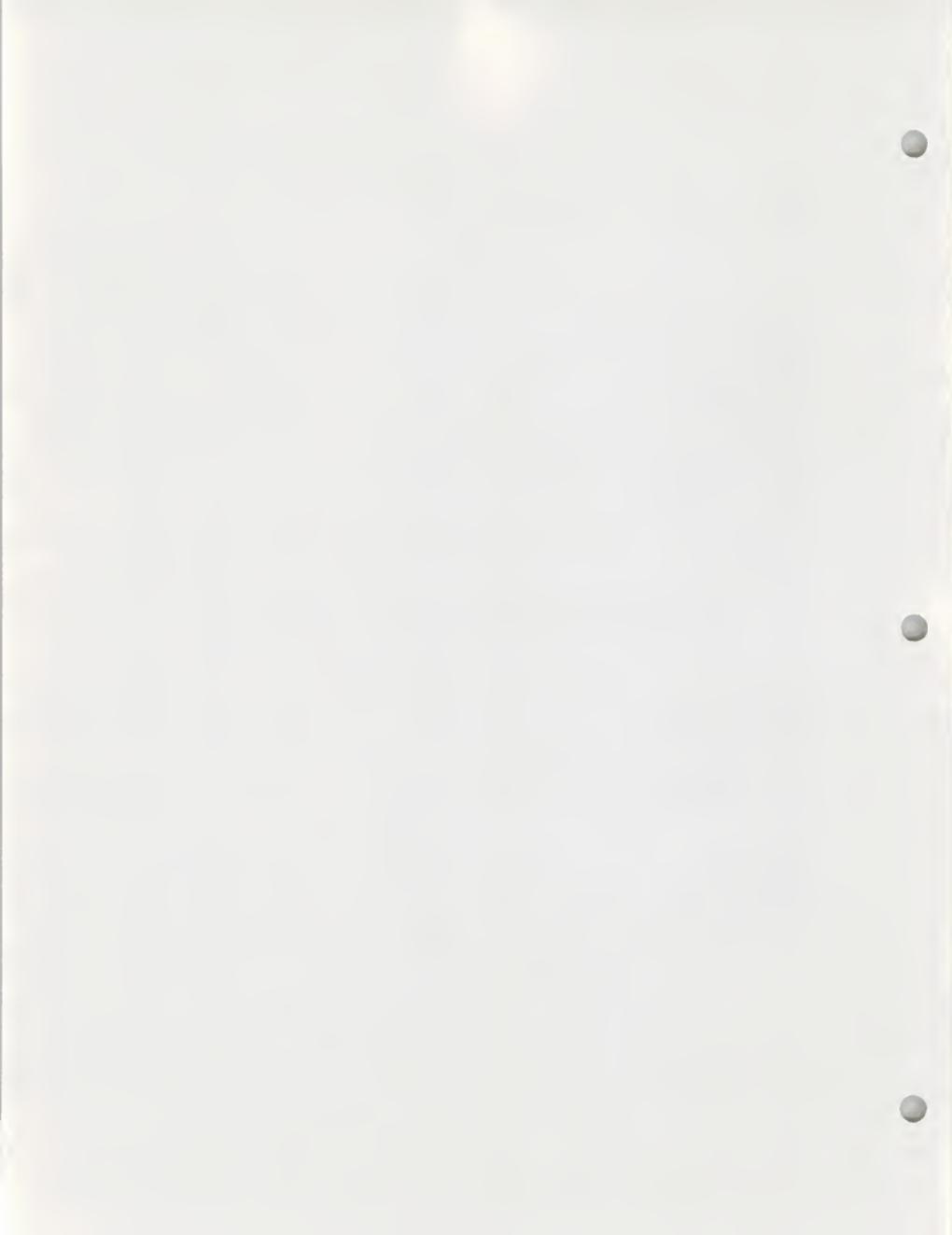
TAXON	A	B	C	SAMPLE # D	SUM	%RA	MEAN #/m ²	STAND DEV
TRICHOPTERA								
Agapetus sp.	3	2	2	4	11	1	28	10
Arctopsyche grandis	1	1	3	4	9	1	23	15
Cheumatopsyche spp.	9	12	17	95	133	9	333	413
Hydropsyche								
(Ceratopsyche) sp.1	20	32	34	65	151	11	378	192
(Ceratopsyche) sp.2	6	5	4	4	19	1	48	10
(Ceratopsyche) sp.3	0	0	2	1	3	0	8	10
(Hydropsyche) spp.	49	51	66	150	316	22	790	479
Hydroptila sp.	0	1	0	1	2	0	5	6
Rhyacophila acropedes	0	1	0	0	1	0	3	5
AMPHIPODA								
Hyalella azteca	1	1	1	0	3	0	8	5
GASTROPODA								
Gyraulus sp.	0	0	0	1	1	0	3	5
<hr/>								
TOTAL NUMBER	161	297	315	656	1429	100	3573	2107
TOTAL TAXA	24	23	24	30	39		25	3
S.W. DIVERSITY	3.44	3.02	3.20	3.19	3.34		3.21	0.17
EQUITABILITY	0.65	0.50	0.54	0.43	0.37		0.53	0.09
BIOTIC INDEX					2.95			
BIOT. COND. INDEX					55			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 6 (Warm Spr. Creek near mouth)
 DATE: August 11, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D			#/m ²	DEV
DIPTERA								
unassoc. chiron pupa	0	1	0	1	2	0	5	6
Empididae pupa	0	1	0	0	1	0	3	5
Hexatoma sp.	3	1	0	3	7	1	18	15
Micropsectra sp.	0	0	0	1	1	0	3	5
Orthocladius (O.)sp.	0	0	0	1	1	0	3	5
Pagastia sp.	3	6	7	1	17	3	43	28
Paraphaenocladius sp	0	2	0	0	2	0	5	10
Phaenopsectra sp.	0	0	0	1	1	0	3	5
Protanyderus sp.	0	1	0	0	1	0	3	5
Rheotanytarsus sp.	0	1	0	0	1	0	3	5
Simulium sp.	0	2	1	0	3	1	8	10
Tvetenia sp.	0	2	0	4	6	1	15	19
EPHEMEROPTERA								
Baetis tricaudatus	32	32	20	12	96	20	248	98
Tricorythodes minutus	0	1	0	0	1	0	3	5
Drunella grandis	1	0	0	1	2	0	5	6
COLEOPTERA								
Zaitzevia parva	1	0	0	3	4	1	10	14
Heterlimnius sp.	0	1	0	0	1	0	3	5
Oreodytes sp. 1	0	1	1	0	2	0	5	6
Optioservus								
quadrimaculatus	17	15	3	12	47	10	118	62
divergens/pecosensis	2	0	2	3	7	1	18	13
Promoresia (?) sp.	0	3	0	4	7	1	18	21
PLECOPTERA								
Hesperoperla								
pacific	8	2	2	11	23	5	58	45
Pteronarcella badia	41	18	1	9	69	14	173	173
Skwala sp.	43	7	10	19	79	16	198	163



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 6 (CONCLUDED)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
TRICHOPTERA								
Agapetus sp.	10	2	0	2	14	3	35	44
Arctopsyche grandis	0	7	0	2	9	2	23	33
Brachycentrus sp.1	0	1	0	0	1	0	3	5
Cheumatopsyche spp.	0	2	1	1	4	1	10	8
Hydropsyche								
(Ceratopsyche) sp.1	13	11	1	11	36	7	90	54
(Ceratopsyche) sp.2	0	0	1	5	6	1	15	24
(Hydropsyche) sp.1	11	11	4	11	37	8	93	35
<hr/>								
TOTAL NUMBER	185	131	54	118	488	100	1220	538
TOTAL TAXA	13	23	13	21	31		18	5
S.W. DIVERSITY	3.01	3.63	2.86	3.83	3.65		3.33	0.47
EQUITABILITY	0.87	0.78	0.78	0.98	0.59		0.85	0.10
BIOTIC INDEX					2.04			
BIOT. COND. INDEX					81			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 7 (Clark Fork River below Warm Springs Ck)
 DATE: August 11, 1986
 SAMPLE TYPE: modified hess

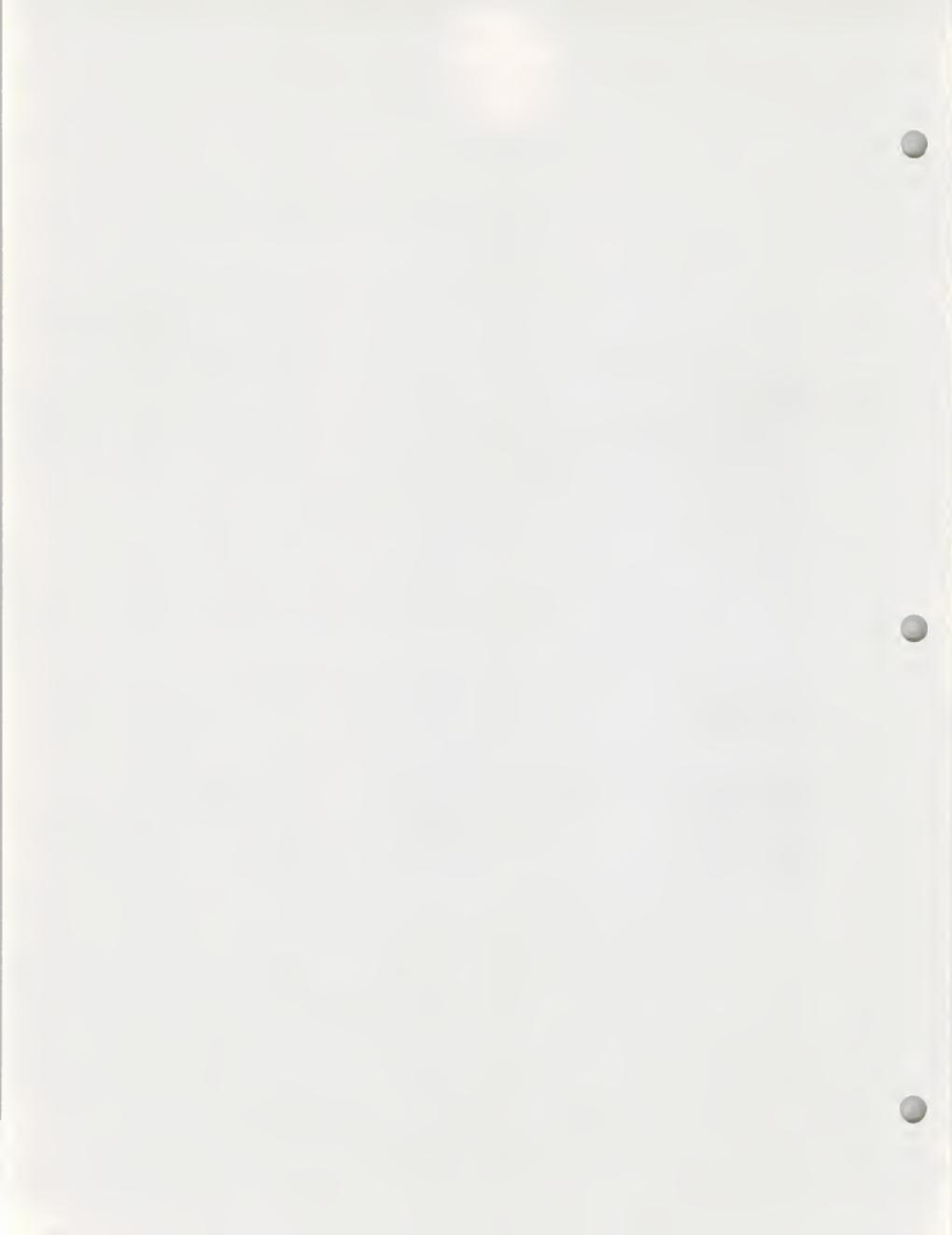
TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	5	3	0	2	10	0	25	21
Antocha sp.	36	21	13	7	77	2	193	126
Atherix pachypus	3	2	2	4	11	0	28	10
Cardiocladius sp.	4	0	4	1	9	0	23	21
Crictotopus								
(C.) trifascia gp	0	1	0	0	1	0	3	5
(C.) tremelus gp	2	0	0	0	2	0	5	10
(C.)/Orthocladius (O)	2	1	0	0	3	0	8	10
(N.) nostocladus gp	7	3	4	1	15	0	38	25
Hexatoma sp.	1	0	5	1	7	0	18	22
Micropsectra sp.	1	0	0	1	2	0	5	6
Orthocladius (O.) sp	4	1	1	0	6	0	15	17
Odontomesa sp.	0	1	0	0	1	0	3	5
Pagastia sp.	5	4	3	2	14	0	35	13
Paraphaenocladius sp	0	1	0	1	2	0	5	6
Rheotanytarsus sp.	0	1	1	0	2	0	5	6
Simulium sp.	3	4	61	69	137	4	343	357
Tvetenia spp.	1	5	6	7	19	1	48	26
EPHEMEROPTERA								
Baetis tricaudatus	103	34	39	67	243	7	608	317
Drunella doddsi	0	0	0	1	1	0	3	5
COLEOPTERA								
Cleptelmis ornata	0	0	0	1	1	12	1040	
Optioservus						0	3	5
quadrimaculatus	185	31	120	35	371	11	928	739
divergins/pecosensis	10	2	5	1	18	1	45	40
Zaitzevia parva	14	6	1	5	26	1	65	54
PLECOPTERA								
Skwala sp.	16	2	7	8	33	1	83	58
Hesperoperla								
pacific	15	3	15	3	36	1	90	69
Pteronarcella badia	107	46	81	43	277	8	693	305



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 7 (CONCLUDED)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
TRICHOPTERA								
Cheumatopsyche spp.	130	38	58	47	273	60	5105	420
Hydropsyche						8	683	
(Ceratopsyche) sp.1	99	45	58	55	257	8	643	238
(Ceratopsyche) sp.2	9	9	21	5	44	1	110	69
(Hydropsyche) spp.	524	230	214	488	1456	43	3640	1648
Hydroptila sp.	3	1	0	0	4	0	10	14
Helicopsyche borealis	0	2	0	0	2	0	5	10
Oecetis sp.	4	1	0	1	6	0	15	17
MEGALOPTERA								
Sialis sp.	1	0	0	0	1	0	3	5
AMPHIPODA								
Hyallela azteca	4	1	3	1	9	0	23	15
GASTROPODA								
Gyraulus sp.	1	0	0	0	1	0	3	5
OLIGOCHAETA								
Tubificidae	0	6	1	4	11	0	28	28
<hr/>								
TOTAL NUMBER	1299	505	723	861	3388	100	8470	3351
TOTAL TAXA	28	28	23	26	37		26	2
S.W. DIVERSITY	2.91	2.94	3.23	2.43	2.97		2.88	0.33
EQUITABILITY	0.38	0.38	0.58	0.28	0.43		0.41	0.13
BIOTIC INDEX					2.66			
BIOT. COND. INDEX					55			



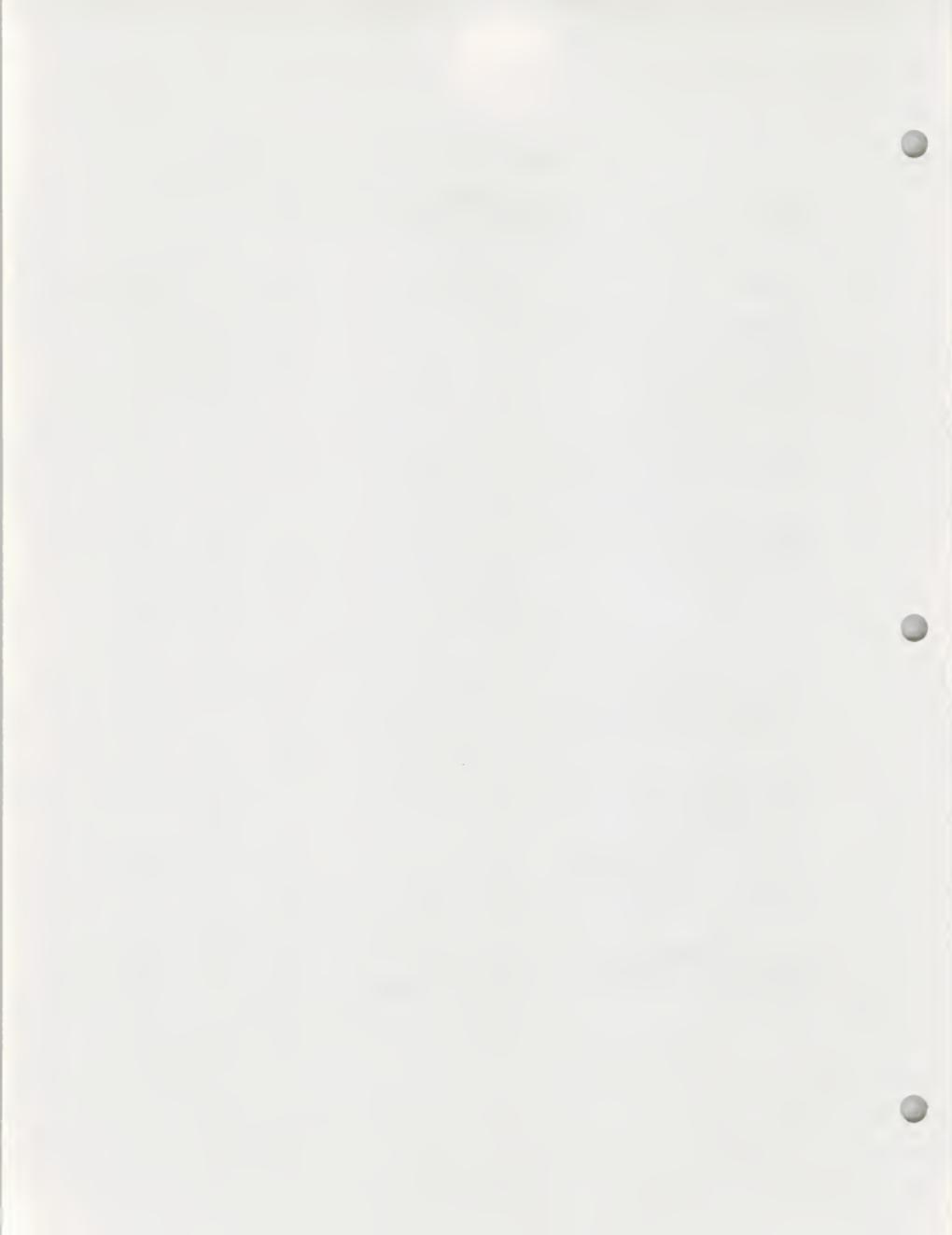
CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 8 (Clark Fork River @ Dempsey)

DATE: August 11, 1986

SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	0	1	0	1	2	0	5	6
Antocha sp.	12	32	18	28	90	4	225	91
Atherix pachypus	12	21	18	43	94	4	235	135
Cricotopus								
(C.) tremulus gp	0	2	0	0	2	0	5	10
(N.) nostocladius gp	0	3	2	0	5	0	13	15
Hexatoma sp.	1	0	1	3	5	0	13	13
Micropsectra sp.	0	1	0	0	1	0	3	5
Microtendipes sp.	0	0	0	1	1	0	3	5
Orthocladius (0.)sp.	0	0	0	3	3	0	8	15
Nanocladius sp.	0	1	0	1	2	0	5	6
Pagastia sp.	0	0	2	5	7	0	18	24
Pentaneura sp.	1	0	1	0	2	0	5	6
Simulium sp.	0	1	0	1	2	0	5	6
Tipula sp.	0	0	1	0	1	0	3	5
Tvetenia sp.	0	0	1	1	2	0	5	6
EPHEMEROPTERA								
Baetis insignificans	0	0	1	0	1	0	3	5
Baetis tricaudatus	13	35	157	8	213	9	533	702
Tricorythodes								
minutus	2	6	6	9	23	1	58	29
COLEOPTERA								
Cleptelmis ornata	0	1	0	3	4	0	10	14
Oreodytes sp. 1	1	3	1	0	5	0	13	13
Optioservus								
quadrimaculatus/spp	24	71	60	79	234	10	585	243
divergins/pecosensis	0	3	1	4	8	0	20	18
Zaitzevia parva	2	9	14	2	27	1	68	59
PLECOPTERA								
Isogenoides sp.	0	5	2	1	8	0	20	22
Pteronarcella badia	1	1	9	2	13	1	33	39
Skwala sp.	22	46	51	45	164	7	410	129



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 8 (Concluded)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
TRICHOPTERA								
Cheumatopsyche spp.	0	0	5	8	13	1	33	39
Hydropsyche								
(Ceratopsyche) sp.1	17	96	93	94	300	13	750	387
(Ceratopsyche) sp.2	0	19	12	28	59	3	148	118
(Hydropsyche) spp.	112	270	329	323	1034	44	2585	1012
Hydropsyche sp.	0	2	2	3	7	0	18	13
Oecetis sp.	8	1	2	3	14	1	35	31
MEGALOPTERA								
Sialis sp.	0	0	0	2	2	0	5	10
OLIGOCHAETA								
Tubificidae	1	0	5	2	8	0	20	22
AMPHIPODA								
Hyallela azteca	0	0	0	1	1	0	3	5
<hr/>								
TOTAL NUMBER	229	630	794	704	2357	100	5893	2494
TOTAL TAXA	15	22	25	27	35		22	5
S.W. DIVERSITY	2.59	2.79	2.74	2.79	2.87		2.73	0.10
EVENNESS	0.66	0.63	0.59	0.59	0.56		0.62	0.04
EQUITABILITY	0.55	0.44	0.37	0.36	0.34		0.43	0.09
BIOTIC INDEX					2.62			
BIOT. COND. INDEX					58			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 9 (Clark Fork River @ Deer Lodge)
 DATE: August 21, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C*	D				
DIPTERA								
unassoc. chiron pupa	0	1	0	0	1	0	3	5
Antocha sp.	12	8	38	9	67	1	168	143
Atherix pachypus	16	19	22	7	64	1	160	65
Cardiocladius sp.	0	3	0	0	3	0	8	15
Corynoneura sp.	0	0	0	2	2	0	5	10
Cricotopus								
(C.)/Orthocladius	3	3	4	8	18	0	45	24
(C.) trifascia gp	4	0	0	7	11	0	28	34
(C.) tremelus gp	1	0	0	0	1	0	3	5
(N.) nostocladius gp	3	2	4	4	13	0	33	10
Hexatoma sp.	4	8	8	13	33	1	83	37
Micropectra sp.	1	0	6	3	10	0	25	26
Nanocladius sp.	1	0	0	0	1	0	3	5
Pagastia sp.	0	2	2	2	6	0	15	10
Paraphaenocladius sp	0	1	4	3	8	0	20	18
Polypedilum sp.	1	0	0	1	2	0	5	6
Pentaneura sp.	0	0	2	1	3	0	8	10
Simulium spp.	29	118	18	48	213	4	533	449
Palpomyia complex	0	0	2	0	2	0	5	10
Tvetenia spp.	2	0	12	11	25	0	63	61
EPHEMEROPTERA								
Baetis insignificans	9	2	4	3	18	11	1610	
Baetis tricaudatus	153	115	274	74	616	11	1540	863
Tricorythodes								
minutus	4	1	4	1	10	0	25	17
COLEOPTERA								
Hydrophilus sp.	0	0	2	0	2	0	5	10
Optioservus								
quadrimaculatus	15	13	52	86	166	3	415	347
divergins/pecosensis	3	1	0	9	13	0	33	40
Zaitzevia parva	2	1	4	17	24	0	60	74
PLECOPTERA								
Claassinia sabulosa	0	0	0	1	1	0	3	5
Isogenoides sp.	9	7	16	12	44	1	110	39
Pteronarcella badia	0	10	4	8	22	0	55	44
Skwala sp.	5	16	30	13	64	1	160	104



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 9 (CONCLUDED)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C*	D				
TRICHOPTERA								
Brachycentrus sp.	1	0	0	0	1	0	3	5
Cheumatopsyche spp.	0	0	0	1	1	0	3	5
Glossosoma sp.	0	0	0	1	1	0	3	5
Hydropsyche								
(Ceratopsyche) sp.1	18	9	18	16	61	1	153	43
(Hydropsyche) spp.	594	764	1910	836	4104	73	10260	5980
Oecetis sp.	0	1	2	0	3	0	8	10
Hydroptila sp.	1	1	0	0	2	0	5	6
ODONATA								
Ophiogomphus sp.	0	1	0	0	1	0	3	5
OLIGOCHAETA								
Tubificidae	1	0	0	0	1	0	3	5
<hr/>								
TOTAL NUMBER	892	1107	2442	1197	5638	100	14095	7001
TOTAL TAXA	25	23	24	28	39		25	2
S.W. DIVERSITY	1.87	1.74	1.37	1.97	1.72		1.74	0.26
EQUITABILITY	0.19	0.19	0.13	0.18	0.11		0.17	0.03
BIOTIC INDEX					2.92			
BIOT. COND. INDEX					53			

* sample C was subsampled (2/4ths).



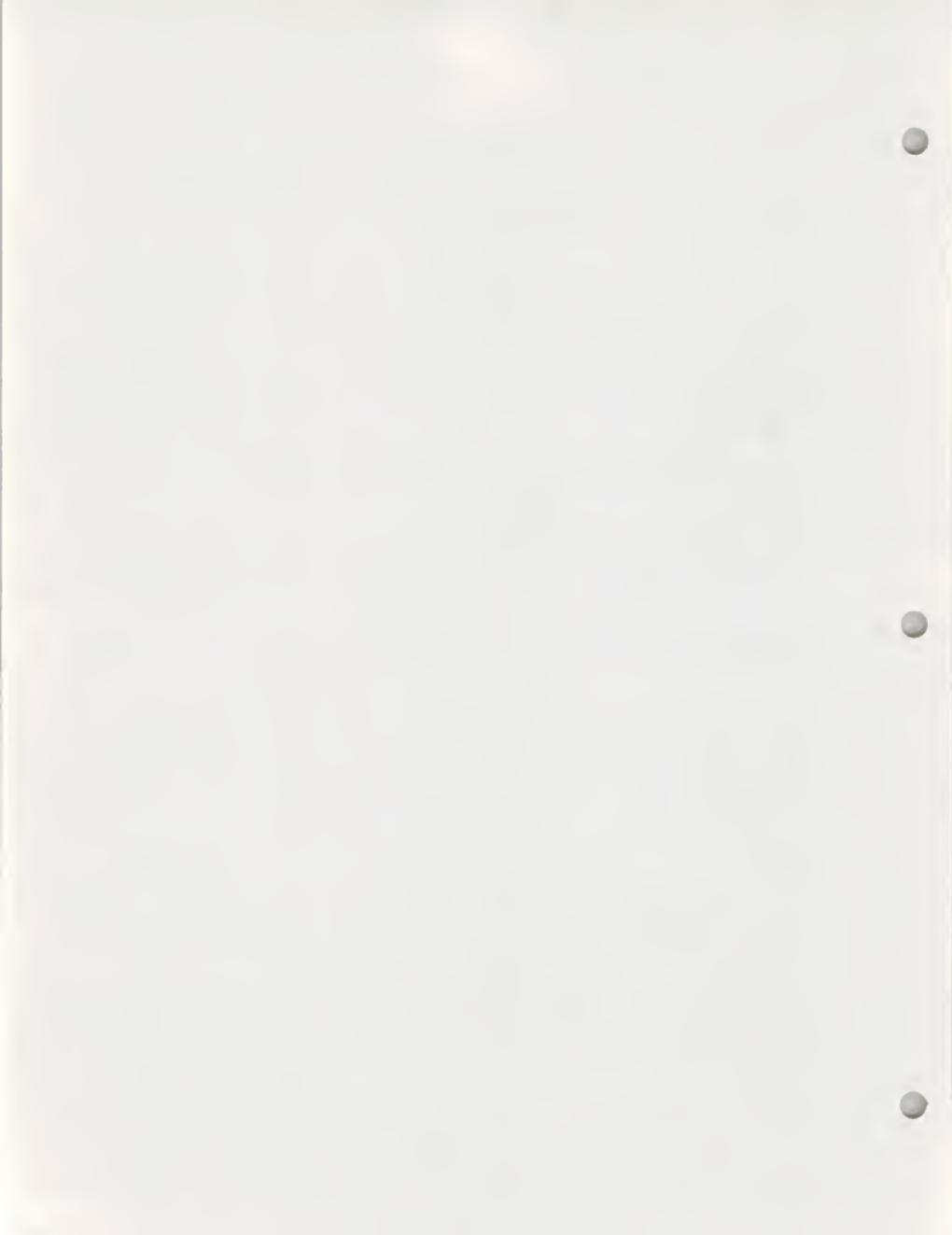
CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 10 (CFR above the L. Blackfoot R)

DATE: August 21, 1986

SAMPLE TYPE: modified hess

TAXON	A	B	C*	D*	SUM	%RA	MEAN #/m ²	STAND DEV
DIPTERA								
unassoc. chiron pupa	2	1	6	20	29	0	73	88
Antocha sp.	1	0	4	4	9	0	23	21
Cardiocladius sp.	2	4	14	40	60	0	150	175
Cricotopus								
/Orthocladius (O)	3	8	2	8	21	0	53	32
(C.) trifascia gp	12	44	44	64	164	1	410	215
(C.) nostococladius	21	41	88	88	238	2	595	339
Eukiefferiella cla	0	0	4	0	4	0	10	20
Hexatomma sp.	34	8	0	0	42	0	105	161
Micropsectra sp.	10	0	2	0	12	0	30	48
Nanocladius sp.	0	1	0	0	1	0	3	5
Orthocladius sp.	1	0	2	0	3	0	8	10
Paraphaenocladius sp	23	12	34	20	89	1	223	91
Pentaneura sp.	6	4	0	0	10	0	25	30
Polypedilum sp.	11	0	6	8	25	0	63	46
Rheotanytarsus sp.	0	1	2	0	3	0	8	10
Simulium spp.	48	237	960	1408	2653	21	6633	6332
Tvetenia sp.	15	43	22	66	146	1	365	230
EPHEMEROPTERA								
Baetis bicaudatus	2	4	2	8	16	0	40	28
Baetis insignificans	2	0	2	0	4	0	10	12
Baetis tricaudatus	246	189	290	296	1021	8	2553	495
Tricorythodes								
minutus	47	8	2	20	77	1	193	200
Psuedocloeon sp.	0	1	2	0	3	0	8	10
COLEOPTERA								
Optioservus							1	288
quadrimaculatus	12	25	30	16	83	1	208	82
divergins/pecosensis	5	7	2	0	14	0	35	31
Zaitzevia parva	0	8	6	4	18	0	45	34
PLECOPTERA								
Skwala sp.	1	7	12	4	24	0	60	47
Isogenoides sp.	25	79	26	28	158	1	395	264
Pteronarcella badia	0	0	18	20	38	0	95	110

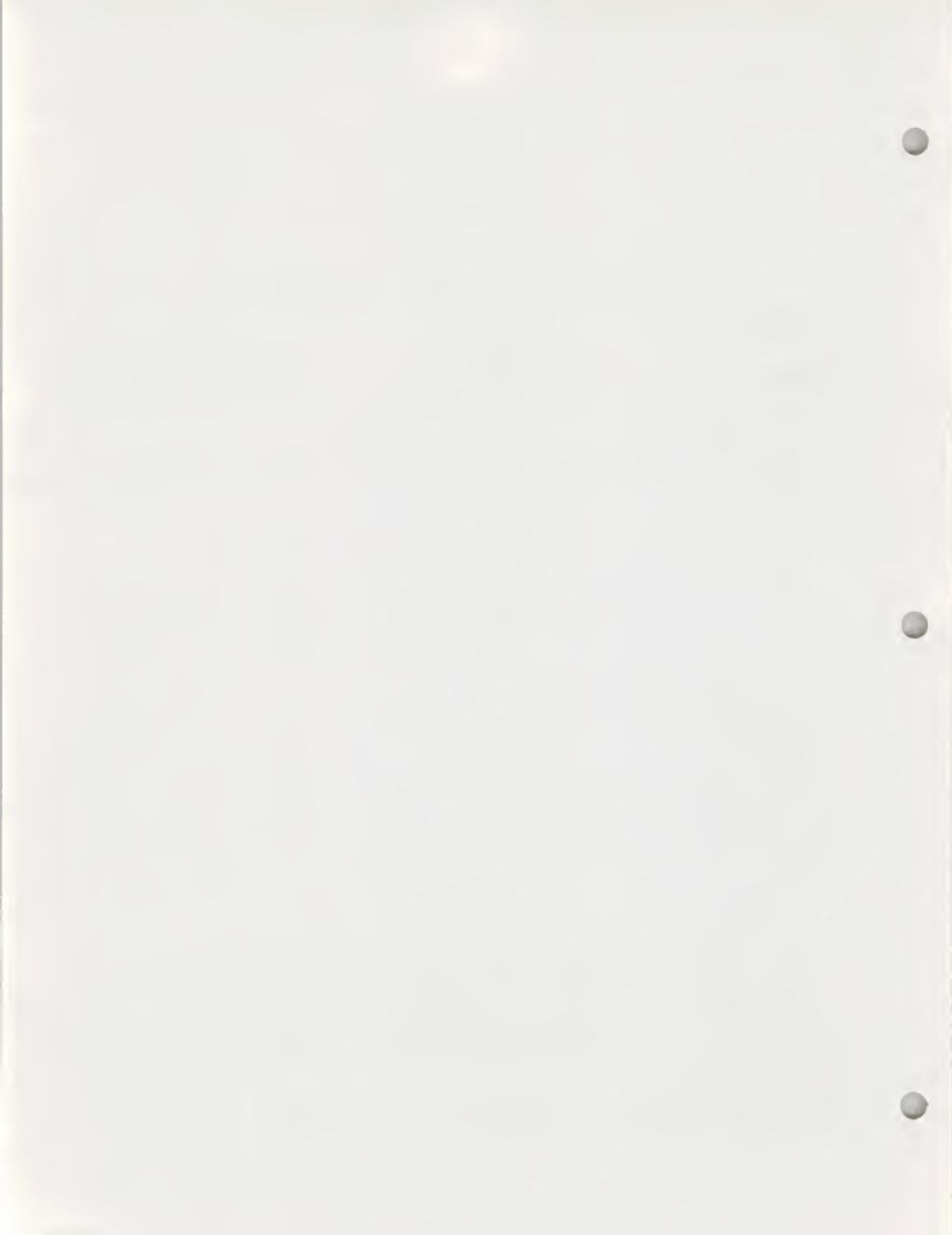


CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 11 (Concluded)

TAXON	A*	B	C*	D*	SUM	%RA	MEAN #/m ²	STAND DEV
COLEOPTERA								
Optioservus							115	
divergins/pecosensis	8	4	2	16	30	1	75	62
quadrimaculatus	8	0	0	4	12	0	30	38
Zaitzevia parva	0	0	4	0	4	0	10	20
PLECOPTERA								
Chloroperlinae	12	0	0	4	16	0	528	
Hesperoperla							40	57
pacific	4	0	0	4	8	0	20	23
Isogenoides sp.	24	10	46	72	152	5	380	271
Pteronarcella badia	16	0	0	8	24	1	60	77
Skwala sp.	0	3	0	8	11	0	28	38
TRICHOPTERA								
Arctopsyche grandis	24	1	4	4	33	33	2795	
Brachycentrus						1	83	106
occidentalis	0	0	0	4	4	0	10	20
Cheumatopsyche spp.	4	0	0	4	8	0	20	23
Hydropsyche								
(Ceratopsyche) sp.1	72	10	4	68	154	5	385	365
(Hydropsyche) spp.	412	80	30	252	774	23	1935	1740
Hydroptila sp.	64	16	24	12	116	3	290	239
Ochrotrichia sp.	4	2	0	4	10	0	25	19
Oecetis sp.	0	3	2	4	9	0	23	17
Psychomyia flava	0	0	10	0	10	0	25	50
HYDRACARINA								
	0	1	0	0	1	0	3	5
<hr/>								
TOTAL NUMBER	1036	572	418	1328	3354	100	8385	4189
TOTAL TAXA	30	28	24	35	49		29	5
S.W. DIVERSITY	3.41	2.89	3.26	3.34	3.71		3.23	0.23
EVENNESS	0.69	0.60	0.71	0.65	0.66		0.66	0.05
EQUITABILITY	0.51	0.37	0.57	0.41	0.39		0.47	0.09
BIOTIC INDEX					2.72			
BIOT. COND. INDEX					59			

* samples A (2/8ths), C (2/4ths) and D (2/8ths) were subsampled.



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 10 (Concluded)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C*	D*				
TRICHOPTERA								
Agapetus sp.	0	1	0	0	1	0	3	5
Arctopsyche grandis	0	2	0	0	2	0	5	10
Cheumatopsyche spp.	59	56	76	72	263	2	658	97
Hydropsyche								
(Ceratopsyche) sp.1	16	14	58	20	108	1	270	208
(Hydropsyche) spp.	872	1360	2348	2544	7124	57	17810	7973
Hydroptila sp.	2	40	10	0	52	0	130	185
Oecetis sp.	1	3	0	0	4	0	10	14
Psychomyia flavaida	1	0	0	0	1	0	3	5
ODONATA								
Ophiogomphus sp.	1	0	2	0	3	0	8	10
<hr/>								
TOTAL NUMBER	1481	2208	4076	4758	12523	100	31308	15400
TOTAL TAXA	28	27	29	20	37		26	4
S.W. DIVERSITY	2.41	2.35	2.10	2.05	2.16		2.13	0.17
EQUITABILITY	0.24	0.23	0.18	0.25	0.16		0.23	0.03
BIOTIC INDEX					2.97			
BIOT. COND. INDEX					50			

* samples C (2/4ths) and D (2/8ths) were subsampled.



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 11 (CFR @ Gold Creek)
 DATE: August 21, 1986
 SAMPLE TYPE: modified hess

TAXON		SAMPLE #				SUM	%RA	MEAN	STAND
		A*	B	C*	D*			#/m ²	DEV
DIPTERA									
unassoc. chiron pupa	16	0	10	4		30	1	75	70
Antocha sp.	20	3	8	12		43	1	108	72
Atherix pachypus	8	3	0	4		15	0	38	33
Cardiocladius sp.	4	0	2	8		14	0	35	34
Corynonuera sp.	0	0	2	0		2	0	5	10
Cricotopus									
(C.) trifascia gp	0	7	0	20		27	1	68	94
(N.) nostococladius	12	0	8	36		56	2	140	155
Hexatoma sp.	8	7	0	20		35	1	88	83
Pentaneura sp.	4	0	0	0		4	0	10	20
Nanocladius sp.	4	0	0	4		8	0	20	23
Eukiefferiella sp.									
claripennis gp	0	0	0	4		4	0	10	20
Limnophora sp.	0	0	10	0		10	0	25	50
Micropsectra sp.	0	1	4	0		5	0	13	19
Microtendipes									
pedellus gp	0	3	0	0		3	0	8	15
Orthocladius									
(Orthocladius)	0	0	0	4		4	0	10	20
(Eudactocladius)	0	0	0	4		4	0	10	20
Parametriocnemus sp.	0	0	4	4		8	0	20	23
Paraphaenocladius sp.	40	1	6	16		63	2	158	173
Polypedilum sp.	8	3	14	20		45	1	113	74
Rheotanytarsus sp.	4	1	4	0		9	0	23	21
Simulium spp.	16	150	0	500		666	20	1665	2323
Palpomyia complex	0	1	0	0		1	0	3	5
Thienemannimyia sp.	0	0	0	4		4	0	10	20
Tvetenia spp.	20	5	4	32		61	2	153	134
EPHEMEROPTERA									
Attenella margarita	12	6	0	0		18	1	45	57
Baetis bicaudatus	16	3	0	12		31	1	78	75
Baetis insignificans	8	3	2	16		29	1	73	64
Baetis tricaudatus	112	54	144	52		362	11	905	452
Drunella grandis	4	0	0	0		4	0	10	20
Rhithrogena sp.	0	1	2	0		3	0	8	10
Tricorythodes									
minutus	68	190	68	84		410	12	1025	588



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 12 (CFR @ Bonita)
 DATE: August 21, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	0	1	1	0	2	0	1268	6
Antocha sp.	0	0	0	1	1	0	5	5
Atherix pachypus	94	64	53	50	261	7	653	201
Cardiocladius sp.	0	0	1	1	2	0	5	6
Cricotopus								
/Orthocladius	2	2	1	0	5	0	13	10
(C.) trifascia gp	3	6	1	0	10	0	25	26
(N.) nostococladius	0	0	0	6	6	0	15	30
Eukiefferiella								
gracei gp	0	0	1	1	2	0	5	6
Hexatoma sp.	6	2	19	2	29	1	73	81
Micropsectra sp.	1	1	0	0	2	0	5	6
Microtendipes								
pedellus gp	0	1	1	0	2	0	5	6
Orthocladius								
(Orthocladius)	1	1	0	0	2	0	5	6
(Eudactocladius)	1	2	6	0	9	0	23	26
Paraphaenocladius sp	1	1	0	0	2	0	5	6
Potthastia gaedi gp	0	3	1	0	4	0	10	14
Polypedilum sp.	12	23	18	7	60	2	150	70
Protanyderus sp.	0	0	1	0	1	0	3	5
Simulium sp.	19	3	5	24	51	1	128	103
Thienemannimyia sp.	0	6	1	1	8	0	20	27
Tvetenia spp.	10	13	6	19	48	1	120	55
EPHEMEROPTERA								
Attenella margarita	1	0	0	1	2	0	1710	6
Baetis bicaudatus	1	7	4	2	14	0	35	26
Baetis insignificans	5	10	9	4	28	1	70	29
Baetis tricaudatus	171	114	137	163	585	15	1463	259
Ephemerella								
infrequens/inermis	0	0	0	1	1	0	3	5
Psuedocloeon sp.	6	10	2	0	18	0	45	44
Rhithrogena sp.	1	2	0	0	3	0	8	10
Tricorythodes								
minutus	4	12	14	3	33	1	83	56
COLEOPTERA								
Optioservus							2	220
quadrimaculatus	7	8	2	0	17	0	43	39
divergins/pecosensis	4	7	4	2	17	0	43	21
Zaitzevia parva	15	16	9	14	54	1	135	31



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 12 (Concluded)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
PLECOPTERA								
<i>Claassinia sabulosa</i>	1	1	0	0	2	0	5	6
<i>Isogenoides</i> sp.	37	31	21	8	97	3	243	127
TRICHOPTERA								
<i>Arctopsyche grandis</i>	4	1	1	3	9	0	23	15
<i>Cheumatopsyche</i> spp.	2	3	7	1	13	0	33	26
<i>Hydropsyche</i>								
(<i>Ceratopsyche</i>) sp.1	13	3	2	20	38	1	95	86
(<i>Hydropsyche</i>) spp.	692	348	555	711	2306	61	5765	1674
<i>Hydroptila</i> sp.	0	1	1	0	2	0	5	6
<i>Oecetis</i> sp.	2	16	20	9	47	1	118	79
<i>Psychomyia flava</i> da	1	0	0	0	1	0	3	5
<hr/>								
TOTAL NUMBER	1117	719	904	1054	3794	100	9485	1772
TOTAL TAXA	29	31	29	24	40		28	3
S.W. DIVERSITY	2.10	2.85	2.22	1.83	2.27		2.25	0.43
EQUITABILITY	0.19	0.32	0.22	0.19	0.16		0.23	0.06
BIOTIC INDEX					2.84			
BIOT. COND. INDEX					57			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 13 (CFR @ Turah)
 DATE: August 11, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B*	C*	D*				
DIPTERA								
unassoc. chiron pupa	9	54	40	22	125	39	6040	
Antocha sp.	2	4	4	0	10	2	313	198
Atherix pachypus	6	40	0	2	48	0	25	19
Cardiocladius sp.	43	68	134	48	293	1	120	188
Cricotopus						5	733	419
(C.) trifascia gp	36	86	298	200	620	10	1550	1175
/Orthocladius	1	0	10	0	11	0	28	49
(N.) Nostococladius	0	0	6	14	20	0	50	66
Hexatoma sp.	19	40	16	18	93	2	233	112
Micropsectra sp.	10	2	4	14	30	0	75	55
Microtendipes								
pedellus gp	1	18	0	0	19	0	48	88
Orthocladius sp.								
(Eudactocladius)	0	0	0	2	2	0	5	10
Pagastia sp.	2	0	2	0	4	0	10	12
Paraphaenocladius sp	0	2	0	0	2	0	5	10
Phaenopsectra sp.	0	0	2	0	2	0	5	10
Polypedilum sp.	195	346	256	86	883	14	2208	1092
Rheotanytarsus sp.	0	8	2	10	20	0	50	48
Simulium sp.	39	22	76	26	163	3	408	246
Thienemannimyia gp.	2	14	4	10	30	0	75	55
Tvetenia sp.	5	14	6	16	41	1	103	56
EPHEMEROPTERA								
Attenella margarita	15	10	4	12	41	10	1550	
Baetis bicaudatus	1	2	2	8	13	1	103	46
Baetis insignificans	5	6	12	2	25	0	33	32
Baetis tricaudatus	42	50	52	34	178	3	63	42
Drunella grandis	5	12	6	2	25	0	445	82
Ephemerella								
infrequens/inermis	0	0	2	0	2	0	5	10
Psuedocloeon sp.	2	6	2	8	18	0	45	30
Rhithrogena sp.	1	0	0	0	1	0	3	5
Seratella tibialis	7	0	0	0	7	0	18	35
Tricorythodes								
minutus	24	92	62	132	310	5	775	458
COLEOPTERA								
Optioservus						4	600	
quadrimaculatus	4	18	6	2	30	0	75	72
divergins/pecosensis	6	30	10	38	84	1	210	154
Zaitzevia parva	18	36	38	34	126	2	315	91

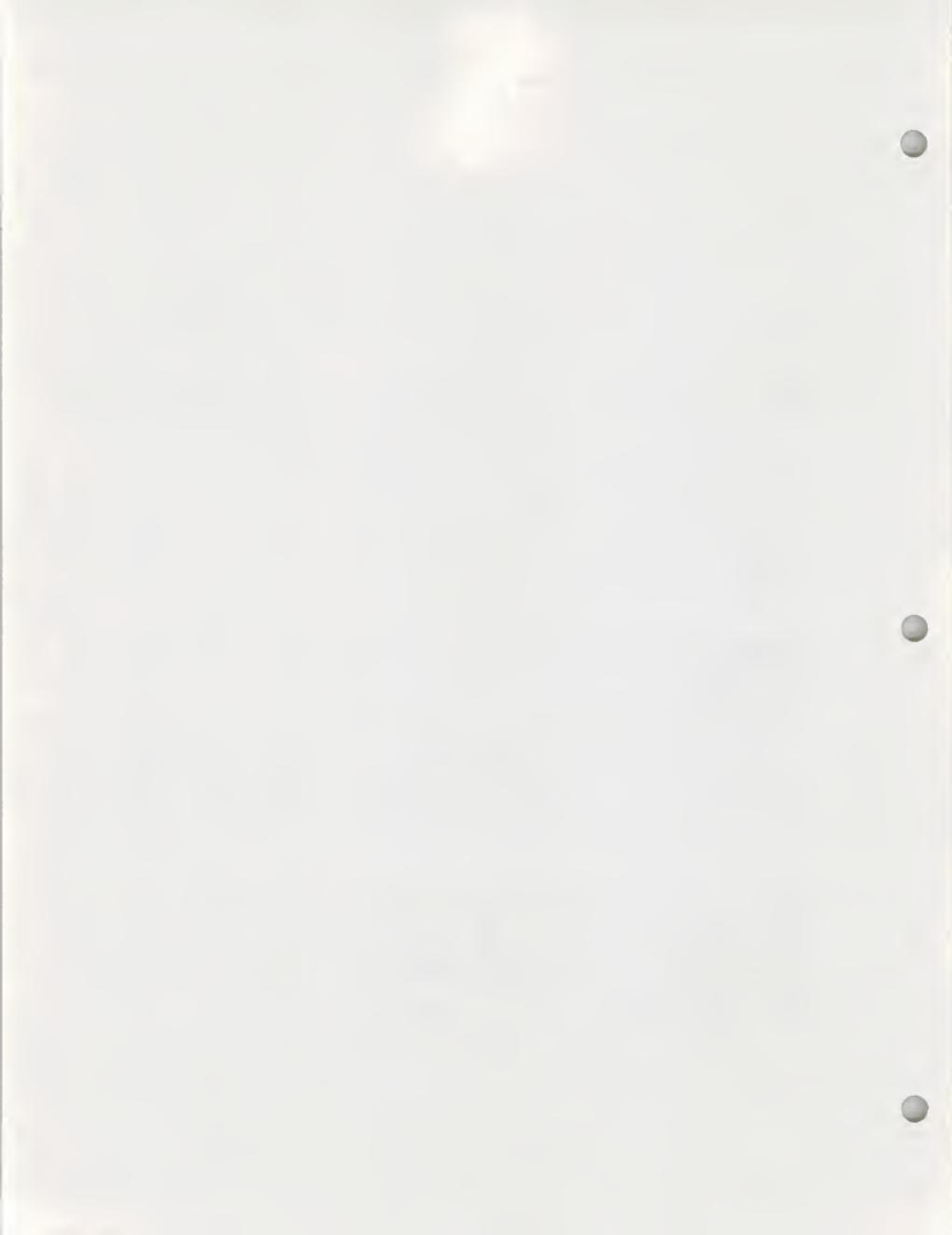


CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 13 (Concluded)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B*	C*	D*				
PLECOPTERA								
<i>Claassinia sabulosa</i>	1	0	0	0	1	4	618	
<i>Hesperoperla pacifica</i>		3	0	0	3	0	8	15
<i>Isogenoides</i> sp.	19	4	8	10	41	1	103	63
<i>Pteronarcella badia</i>	30	12	78	64	184	3	460	303
<i>Pteronarcys californica</i>		2	0	12	16	0	40	54
<i>Skwala</i> sp.		2	0	0	2	0	5	10
TRICHOPTERA								
<i>Arctopsyche grandis</i>	102	78	110	56	346	43	6578	
<i>Brachycentrus occidentalis</i>		0	0	60	60	6	865	245
<i>Cheumatopsyche</i> spp.	31	62	20	10	123	2	308	225
<i>Hydropsyche</i>								
(<i>Ceratopsyche</i>) sp.1	263	198	124	42	627	10	1568	953
(<i>Hydropsyche</i>) sp.1	233	534	458	180	1405	23	3513	1714
<i>Hydroptila</i> sp.		2	12	14	52	1	130	90
<i>Oecetis</i> sp.		1	10	2	13	0	33	46
<i>Psychomyia flavida</i>		1	2	0	3	0	8	10
<i>Rhyacophila</i> sp.1		2	0	0	2	0	5	10
<hr/>								
TOTAL NUMBER	1192	1892	1942	1128	6154	100	15385	4383
TOTAL TAXA	39	32	35	30	47		34	4
S.W. DIVERSITY	3.60	3.57	3.65	3.94	3.86		3.69	0.17
EQUITABILITY	0.45	0.53	0.52	0.75	0.45		0.56	0.13
BIOTIC INDEX					2.70			
BIOT. COND. INDEX					55			

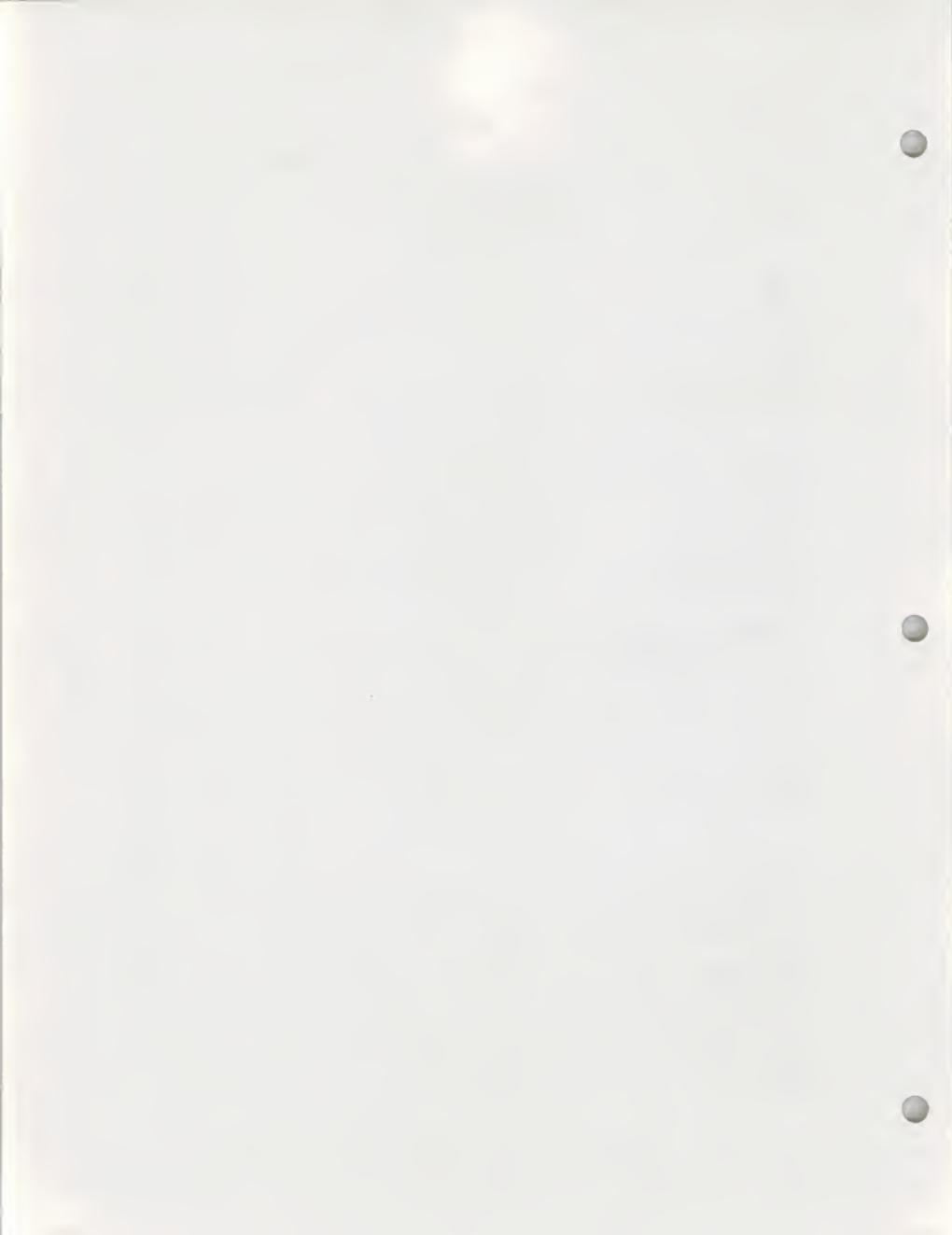
* samples B, C and D were subsampled (4/8ths).



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 14 (Blackfoot River)
 DATE: August 11, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	0	0	1	1	2	1	5	6
Antocha sp.	0	2	0	0	2	1	5	10
Cardiocladius sp.	0	1	0	0	1	0	3	5
Crictotopus								
(C.) trifascia gp	0	3	0	1	4	2	10	14
Eukiefferiella								
coeruleoescens GP	0	0	0	1	1	0	3	5
Hexatoma sp.	2	3	2	1	8	3	20	8
Micropsectra sp.	17	16	6	3	42	16	105	70
Polypedilum sp.	0	0	0	1	1	0	3	5
Simulium sp.	0	0	1	0	1	0	3	5
Thienemanniella sp.	0	0	0	1	1	0	3	5
Tanytarsus sp.	0	1	0	0	1	0	3	5
EPHEMEROPTERA								
Baetis insignificans	4	7	5	5	21	8	53	13
Baetis tricaudatus	1	5	1	4	11	4	28	21
Drunella grandis	0	3	2	0	5	2	13	15
Epeorus longimanus	1	1	2	2	6	2	15	6
Ephemerella								
infrequens/inermis	1	0	0	0	1	0	3	5
Seratella tibialis	2	2	8	5	17	7	43	29
Rhithrogena sp.	2	0	1	0	3	1	8	10
Tricorythodes								
minutus	0	1	0	0	1	0	3	5
COLEOPTERA								
Optioservus								
quadrimaculatus	0	0	3	5	8	3	20	24
divergins/pecosensis	3	2	0	1	6	2	15	13
Zaitzevia parva	10	0	3	0	13	5	33	47
PLECOPTERA								
Doroneuria theodora	8	3	5	7	23	9	58	22
Pteronarcella badia	0	0	1	0	1	0	3	5
Pteronarcys								
californica	2	1	2	1	6	2	15	6
Skwala sp.	0	1	0	0	1	0	3	5
Sweltsa sp.	4	2	1	0	7	3	18	17



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 14 (Concluded)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
TRICHOPTERA								
Arctopsyche grandis	3	1	5	3	12	5	30	16
Cheumatopsyche spp.	0	1	0	0	1	0	3	5
Dicosmoecus sp.	0	0	0	1	1	0	3	5
Helicopsyche borealis	3	1	0	0	4	2	10	14
Hydropsyche (Ceratopsyche) sp.1	5	4	3	3	15	6	38	10
(Hydropsyche) sp.1	4	7	7	1	19	7	48	29
Luecotrichia sp. 1	1	0	2	0	3	1	8	10
Psychomyia flava	0	2	0	0	2	1	5	10
Wormaldia sp.	0	0	1	0	1	0	3	5
MOLLUSCA								
Physa sp.	2	0	0	0	2	1	5	10
Pisidium sp.	0	0	2	0	2	1	5	10
OLIGOCHAETA								
Lumbricidae	1	0	0	1	2	1	5	6
TURBELLARIA								
	2	0	0	0	2	1	5	10
TOTAL NUMBER	78	70	64	48	260	100	650	127
TOTAL TAXA	21	23	21	19	40		21	2
S.W. DIVERSITY	3.87	3.96	4.07	3.88	4.43		3.94	0.09
EVENNESS	0.88	0.88	0.93	0.91	0.83		0.90	0.02
EQUITABILITY	1.01	0.99	1.17	1.13	0.80		1.08	0.09
BIOTIC INDEX					2.09			
BIOT. COND. INDEX					71			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 15 (CFR below Milltown Dam)
 DATE: August 11, 1986
 SAMPLE TYPE: modified hess

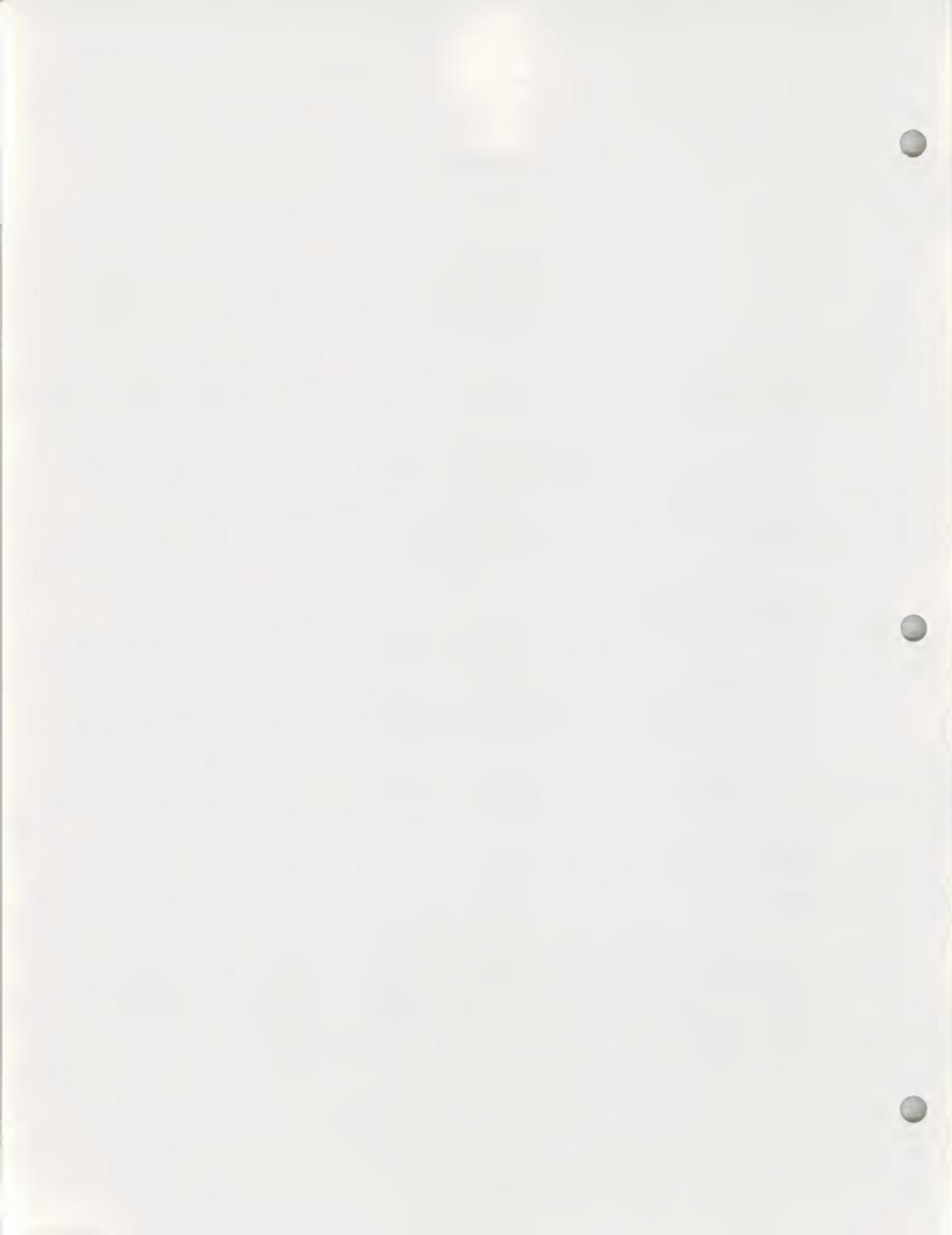
TAXON		A	B	C	D	SUM	%RA	MEAN	STAND
								#/m ²	DEV
DIPTERA									
unassoc. chiron pupa	262	66	9	18		355	6	888	1182
Antocha sp.	1	2	13	6		22	0	55	54
Atherix pachypus	0	1	2	0		3	0	8	10
Cardiocladius spp.	145	150	10	78		383	7	958	659
Chelifera sp.	0	1	0	0		1	0	3	5
Cricotopus									
(C.) tremelus gp	0	0	0	1		1	0	3	5
(C.) trifascia gp	341	222	5	79		647	11	1618	1496
(N.) nostococladius gp0	2	0	0	0		2	0	5	10
/Orthocladius	7	0	1	0		8	0	20	34
Eukiefferiella									
gracei gp	6	2	0	1		9	0	23	26
Micropsectra sp.	2	1	3	1		7	0	18	10
Microtendipes sp.	26	10	5	3		44	1	110	104
Nanocladius sp.	0	1	0	0		1	0	3	5
Orthocladius sp.									
(Orthocladius) sp.	0	0	1	1		2	0	5	6
Pagastia sp.	1	3	8	2		14	0	35	31
Parametriocnemus sp.	0	1	0	0		1	0	3	5
Phaenopsectra sp.	0	1	0	0		1	0	3	5
Polypedilum sp.	192	241	12	53		498	9	1245	1094
Rheotanytarsus sp.	2	3	2	0		7	0	18	13
Simulium sp.	22	21	4	33		80	1	200	120
Tvetenia sp.	9	47	2	3		61	1	153	214
EPHEMEROPTERA									
Attenella margarita	2	0	0	0		2	7	988	
Baetis bicaudatus	1	1	0	0		2	0	5	10
Baetis insignificans	21	17	49	17		104	2	260	154
Baetis tricaudatus	24	69	14	21		128	2	320	250
Drunella grandis	48	48	19	10		125	2	313	197
Drunella doddsi	0	1	0	1		2	0	5	6
Psuedocloeon sp.	0	0	4	1		5	0	13	19
Seratella tibialis	2	11	9	4		26	0	65	42
Tricorythodes minutus	0	0	1	0		1	0	3	5
COLEOPTERA									
Cleptelmis ornata	1	0	1	0		2	3	410	
Optioservus							0	5	6
quadrimaculatus	24	5	0	1		30	1	75	112
divergins/pecosensis	12	36	5	11		64	1	160	137
Zaitzevia parva	24	22	9	13		68	1	170	72



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 15 (Concluded)

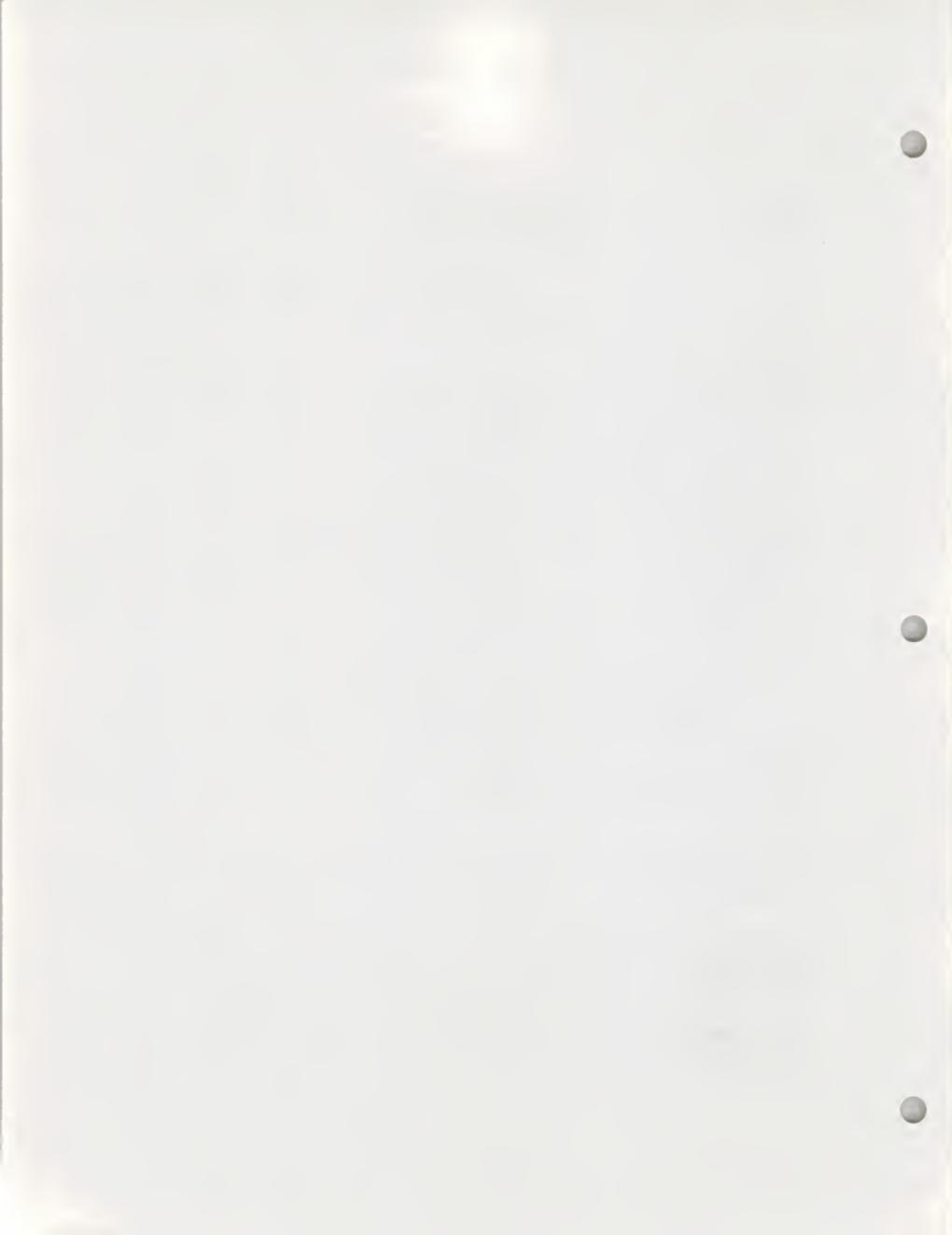
TAXON	A	B	C	D	SUM	%RA	MEAN	STAND
							#/m ²	DEV
PLECOPTERA								
Chloroperlinae	1	0	0	0	1	0	3	5
Claassinia sabulosa	0	1	0	1	2	0	5	6
Hesperoperla pacifica	22	15	1	2	40	1	100	102
Isogenoides sp.	6	16	6	23	51	1	128	83
Pteronarcella badia	99	64	9	9	181	3	453	442
Pteronarcys californica	20	17	5	17	59	1	148	67
Skwala sp.	0	0	0	1	1	0	3	5
TRICHOPTERA								
Arctopsyche grandis	8	4	14	5	31	1	78	45
Brachycentrus occidentalis	0	1	1	4	6	0	15	17
Cheumatopsyche spp.	162	75	99	77	413	7	1033	406
Hydropsyche								
(Ceratopsyche) sp.1	755	413	291	290	1749	31	4373	2196
(Hydropsyche) sp.1	77	80	103	91	351	6	878	118
Ochrotrichia sp.	12	33	0	7	52	1	130	142
Oecetis sp.	0	1	0	0	1	0	3	5
Psychomyia flava	3	3	12	19	37	1	93	78
Rhyacophila sp. 1	1	2	0	0	3	0	8	10
Wormaldia sp.	0	1	0	0	1	0	3	5
LEPIDOPTERA								
Petrophila sp.	12	0	6	13	31	1	78	60
TURBELLARIA								
	0	0	0	4	4	0	10	20
TOTAL NUMBER	2353	1711	735	921	5720	100	14300	7468
TOTAL TAXA	35	41	33	36	53		36	3
S.W. DIVERSITY	3.26	3.67	3.21	3.62	3.60		3.44	0.24
EQUITABILITY	0.39	0.45	0.40	0.49	0.33		0.43	0.05
BIOTIC INDEX					2.85			
BIOT. COND. INDEX					52			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 16 (CFR above Missoula WWTP)
 DATE: August 12, 1986
 SAMPLE TYPE: modified hess

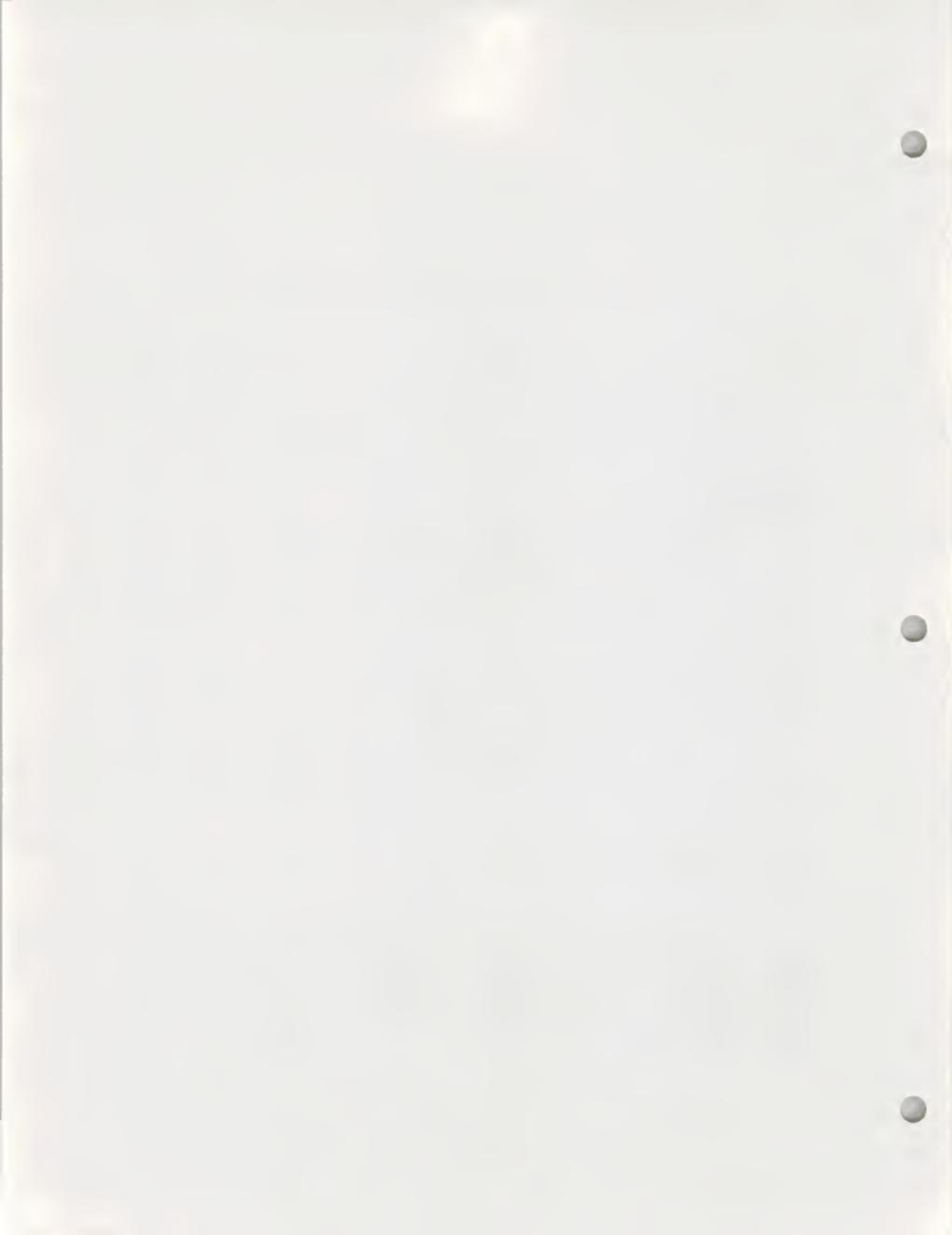
TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	1	0	0	1	2	0	5	6
Antocha sp.	0	1	1	0	2	0	5	6
Atherix pachypus	0	6	2	5	13	0	33	28
Cardiocladus spp.	7	9	11	10	37	1	93	17
<i>Cricotopus</i>								
(C.) trifascia gp	0	7	3	1	11	0	28	31
(N.) nostococladus	1	0	1	0	2	0	5	6
/Orthocladus	2	7	0	0	9	0	23	33
Microtendipes sp.	0	1	0	6	7	0	18	29
Pagastia sp.	0	0	1	0	1	0	3	5
Polypedilum sp.	2	24	21	19	66	2	165	99
Rheotanytarsus sp.	1	3	1	0	5	0	13	13
Simulium sp.	139	2	26	1	168	6	420	657
Stilobezzini gp	0	0	1	5	6	0	15	24
Tvetenia sp.	2	2	10	17	31	1	78	72
EPHEMEROPTERA								
Baetis insignificans	6	36	7	52	101	4	253	226
Baetis tricaudatus	12	1	34	21	68	2	170	140
Drunella grandis	3	0	3	2	8	0	20	14
Drunella doddsi	0	0	0	3	3	0	8	15
Seratella tibialis	3	1	0	0	4	0	10	14
Tricorythodes minutus	0	0	0	1	1	0	3	5
COLEOPTERA								
Optioservus							2	123
quadrimaculatus	1	0	3	2	6	0	15	13
divergins/pecosensis	1	1	4	10	16	1	40	42
Zaitzevia parva	2	2	1	22	27	1	68	102
PLECOPTERA								
Doroneuria theodora	3	0	0	0	3	1	80	
Hesperoperla						0	8	15
pacifica	1	0	1	0	2	0	5	6
Isogenoides sp.	0	3	4	0	7	0	18	21
Pteronarcella badia	1	0	1	7	9	0	23	32
Pteronarcys								
californica	2	2	3	4	11	0	28	10



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 16 (Concluded)

TAXON	A	B	C	D	SUM	%RA	MEAN	STAND
							#/m ²	DEV
TRICHOPTERA								
Arctopsyche grandis	9	6	24	17	56	2	140	81
Brachycentrus occidentalis	1	1	0	0	2	0	5	6
Cheumatopsyche spp.	52	45	81	157	335	12	838	513
Hydropsyche (Ceratopsyche) spp	301	133	349	514	1297	47	3243	1568
(Hydropsyche) spp	73	66	121	70	330	12	825	258
Hydroptila sp.	0	3	0	2	5	0	13	15
Luecotrichia sp.	0	0	0	1	1	0	3	5
Psychomyia flavida	3	44	1	17	65	2	163	198
Rhyacophilidae acropedes/vao	0	0	1	0	1	0	3	5
sp. 1	0	0	1	0	1	0	3	5
Wormaldia sp.	0	0	0	1	1	0	3	5
LEPIDOPTERA								
Petrophila sp.	0	19	6	21	46	2	115	101
ODONATA								
Ophiogomphus sp.	0	0	0	1	1	0	3	5
OLIGOCHAETA								
Enchytraeidae	2	0	0	0	2	0	5	10
TURBELLARIA								
	1	0	0	0	1	0	3	5
<hr/>								
TOTAL NUMBER	632	425	723	990	2770	100	6925	2343
TOTAL TAXA	27	26	30	29	44		28	2
S.W. DIVERSITY	2.52	3.40	2.89	2.89	3.12		2.93	0.36
EQUITABILITY	0.27	0.58	0.30	0.32	0.29		0.37	0.14
BIOTIC INDEX					2.86			
BIOT. COND. INDEX					50			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 18 (CFR @ Shuffields)

DATE: August 12, 1986

SAMPLE TYPE: modified hess

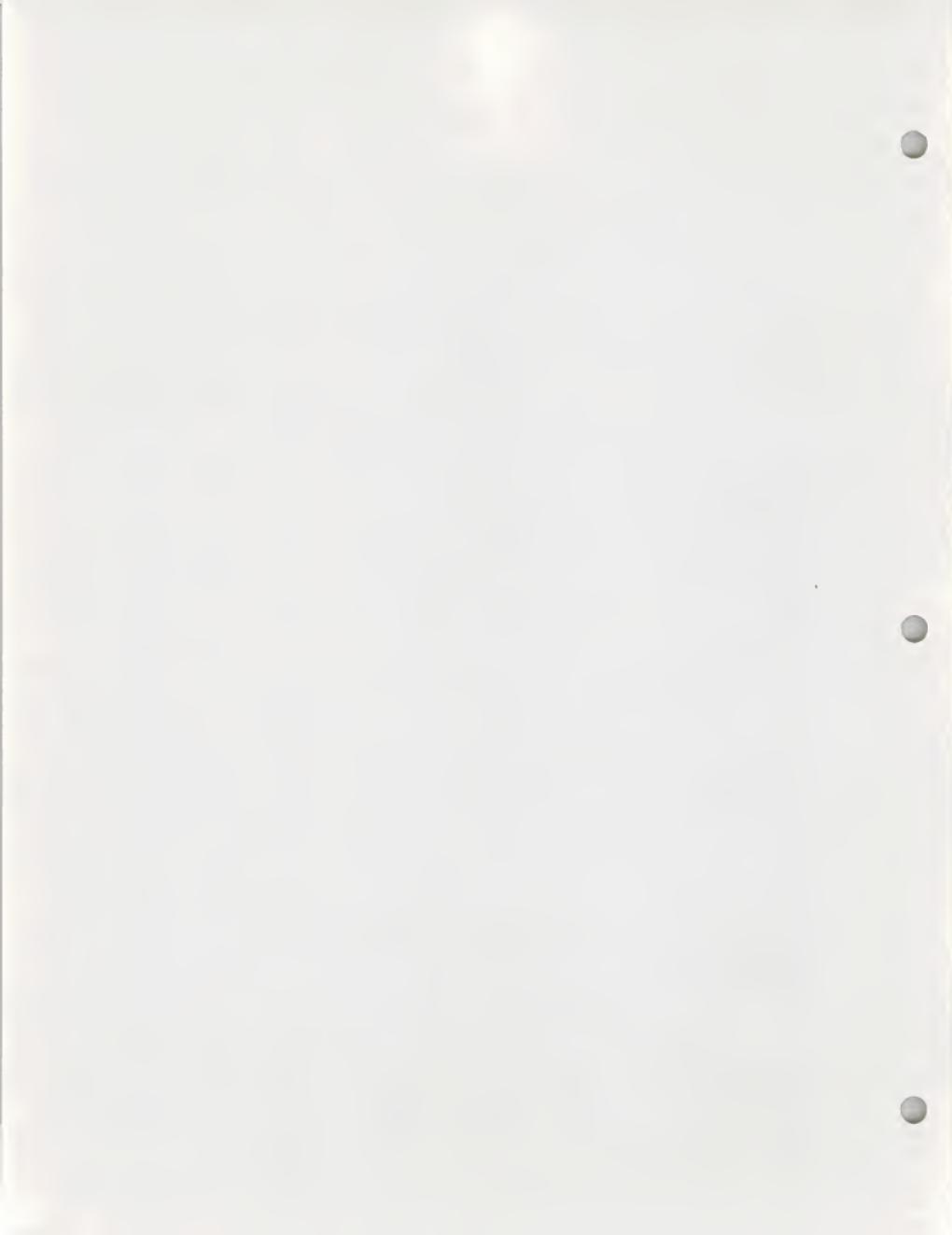
TAXON		SAMPLE #				SUM	%RA	MEAN	STAND
		A	B	C	D		#/m2		DEV
DIPTERA									
unassoc. chiron pupa	0	1	0	7		8	0	20	34
Antocha sp.	0	0	1	0		1	0	3	5
Atherix pachypus	0	1	0	2		3	0	8	10
Cardiocladus spp.	1	10	4	12		27	1	68	51
Cricotopus									
(C.) trifascia gp	0	1	0	5		6	0	15	24
/Orthocladus (O.	0	0	0	3		3	0	8	15
Eukiefferiella									
brehmi gp	0	0	0	1		1	0	3	5
claripennis gp	0	1	0	1		2	0	5	6
Micropsectra sp.	1	2	3	3		9	0	23	10
Microtendipes sp.	0	0	0	1		1	0	3	5
Hexatoma sp.	1	2	1	1		5	0	13	5
Orthocladus sp.									
(Orthocladus) sp.	1	6	0	7		14	1	35	35
Pagastia sp.	0	1	1	1		3	0	8	5
Polypedilum sp.	18	37	22	45		122	5	305	127
Potthastia gaedi gp	1	0	0	0		1	0	3	5
Rheotanytarsus sp.	0	3	2	6		11	0	28	25
Simulium sp.	0	1	0	1		2	0	5	6
Stillobezzini gp	0	1	1	2		4	0	10	8
Thienemannimyia gp	0	0	0	1		1	0	3	5
Tvetenia sp.	0	1	2	5		8	0	20	22
HEMEROPTERA									
Attenella margarita	1	0	0	0		1	0	3	5
Baetis insignificans	19	18	15	15		67	3	168	21
Baetis tricaudatus	18	21	36	15		90	4	225	93
Drunella grandis	1	2	0	0		3	0	8	10
Drunella doddsi	0	1	0	1		2	0	5	6
Psuedocloeon sp.	1	0	3	0		4	0	10	14
Seratella tibialis	2	1	4	0		7	0	18	17
Epeorus albertae	0	1	0	0		1	0	3	5
Rhithrogena hageni	4	3	1	2		10	0	25	13
Tricorythodes minutus	1	2	1	10		14	1	35	44
COLEOPTERA									
Zaitzevia parva	0	5	3	0		8	0	28	
Optioservus									
quadrimaculatus	1	0	0	0		1	0	3	5
divergins/pecosensis	1	0	1	0		2	0	5	6



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 18 (Concluded)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
PLECOPTERA								
Doroneuria theodora	0	1	0	0	1	4	215	
Hesperoperla pacifica	0	3	0	1	4	0	10	14
Isogenoides sp.	22	11	11	22	66	3	165	64
Pteronarcella badia	0	1	5	1	7	0	18	22
Pteronarcys californica	0	4	0	0	4	0	10	20
Skwala sp.	1	0	2	1	4	0	10	8
TRICHOPTERA								
Arctopsyche grandis	4	14	27	7	52	76	4453	
Brachycentrus occidentalis	0	1	1	0	2	2	130	102
Cheumatopsyche spp.	30	97	218	137	482	21	1205	786
Hydropsyche (Ceratopsyche) spp.	105	276	343	194	918	39	2295	1029
(Hydropsyche) spp.	7	88	117	87	299	13	748	473
Oecetis sp.	0	0	0	2	2	0	5	10
Psychomyia flava	0	3	6	14	23	1	58	60
Wormaldia sp.	0	1	0	0	1	0	3	5
Zumatrixchia sp.	0	0	2	0	2	0	5	10
LEPIDOPTERA								
Petrophila sp.	0	3	11	10	24	1	60	54
OLIGOCHAETA								
Enchytraeidae	0	0	0	1	1	0	3	5
TURBELLARIA								
TOTAL NUMBER	242	625	844	624	2335	100	5838	2502
TOTAL TAXA	24	36	29	34	51		30	6
S.W. DIVERSITY	2.94	2.89	2.63	3.23	3.01		2.92	0.24
EQUITABILITY	0.47	0.30	0.30	0.39	0.22		0.37	0.08
BIOTIC INDEX					2.83			
BIOT. COND. INDEX					51			



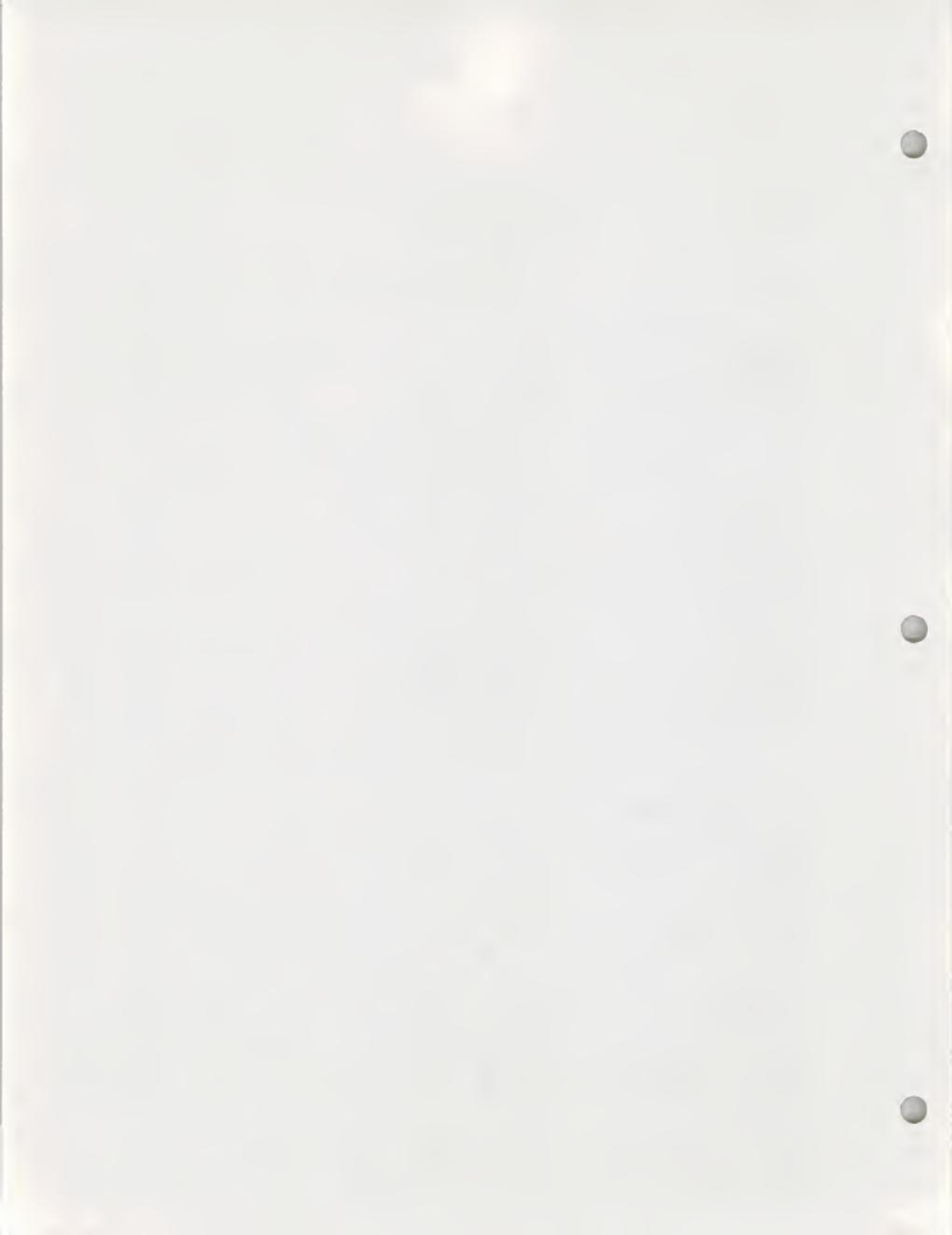
CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 19 (Bitterroot River)

DATE: August 12, 1986

SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	6	9	8	40	63	2	158	162
Atherix pachypus	2	7	4	12	25	1	63	43
Cardiocladius spp.	12	16	21	47	96	3	240	158
Cricotopus								
(C.) trifascia gp	1	7	3	11	22	1	55	44
(C.) bicinctus gp.	0	0	1	0	1	0	3	5
(C.) tremelus gp	8	15	5	36	64	2	160	140
Hexatoma sp.	0	0	0	1	1	0	3	5
Micropsectra sp.	1	12	8	30	51	1	128	124
Microtendipes sp.	0	1	0	1	2	0	5	6
Nanocladius parvulus gp	0	1	0	0	1	0	3	5
Pagastia sp.	0	0	1	1	2	0	5	6
Potthastia								
longimana gp	0	0	1	0	1	0	3	5
gaedii gp	0	1	0	1	2	0	5	6
Polypedilum sp.	9	32	20	60	121	3	303	219
Rheotanytarsus sp.	7	29	16	89	141	4	353	370
Simulium sp.	2	1	17	20	40	1	100	99
Stillobezzini	1	3	2	6	12	0	30	22
Thienemannimyia gp	0	0	0	3	3	0	8	15
Tvetenia sp.	0	7	3	15	25	1	63	65
EPHEMEROPTERA								
Attenella margarita	2	7	6	16	31	1	78	59
Baetis bicaudatus	0	1	0	0	1	0	3	5
Baetis insignificans	8	30	25	73	136	4	340	277
Baetis tricaudatus	8	18	6	47	79	2	198	189
Drunella grandis	1	3	5	20	29	1	73	87
Rhithrogena sp.	0	3	0	11	14	0	35	52
Seratella tibialis	5	5	10	14	34	1	85	44
Tricorythodes								
minutus	0	3	0	2	5	0	13	15
COLEOPTERA								
Narpus concolor	0	0	0	3	3	0	8	15
Optioservus								
quadrimaculatus	8	34	15	69	126	4	315	273
divergins/pecosensi	8	35	21	67	131	4	328	254
Zaitzevia parva	10	29	15	34	88	2	220	113
PLECOPTERA								
Doroneuria theodora	0	2	0	7	9	0	23	33
Isogenoides sp.	3	0	9	17	29	1	73	75
Pteronarcella badia	4	3	17	70	94	3	235	316



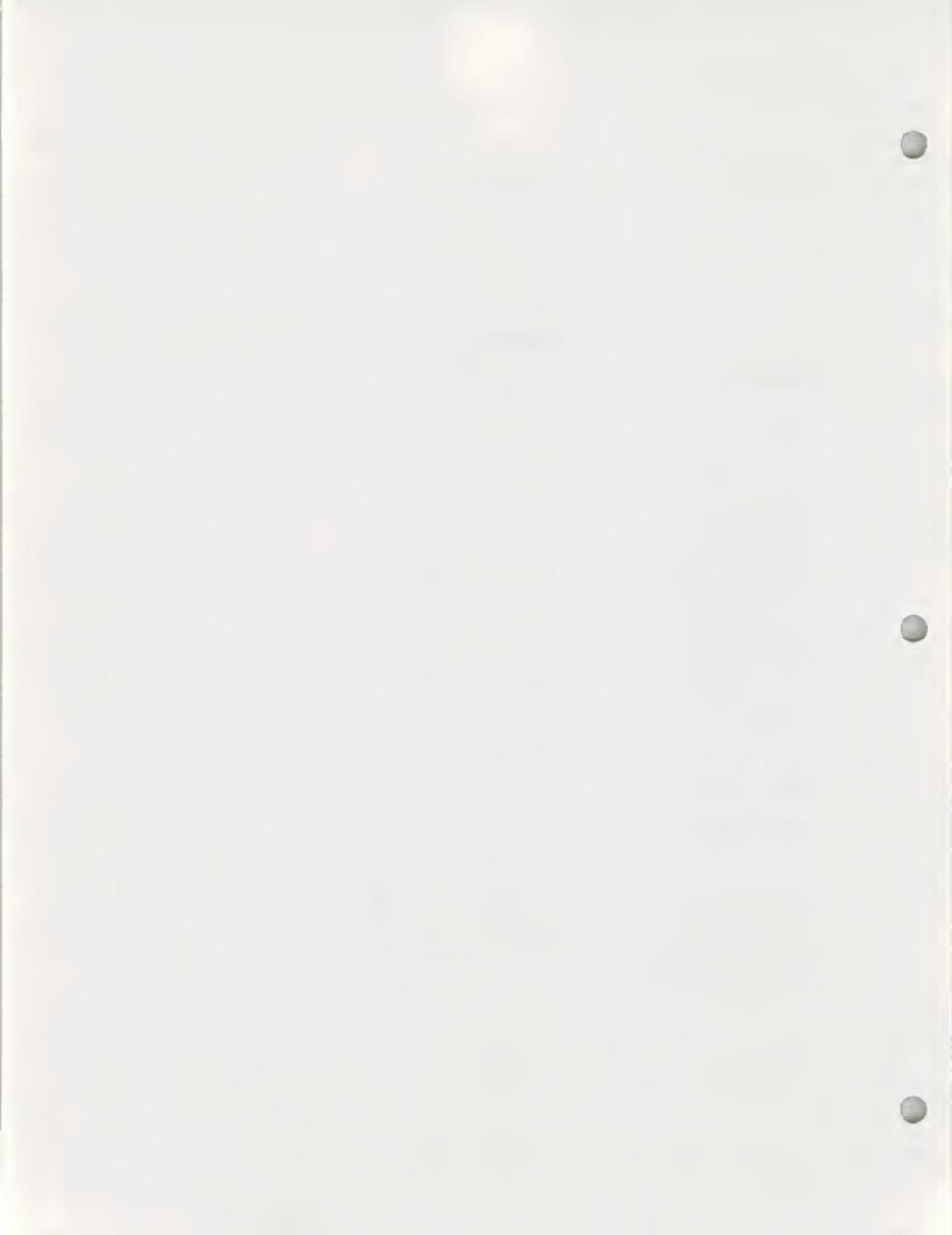
Skwala sp.

4 2 7 31 44 1 110 135

CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 19 (Concluded)

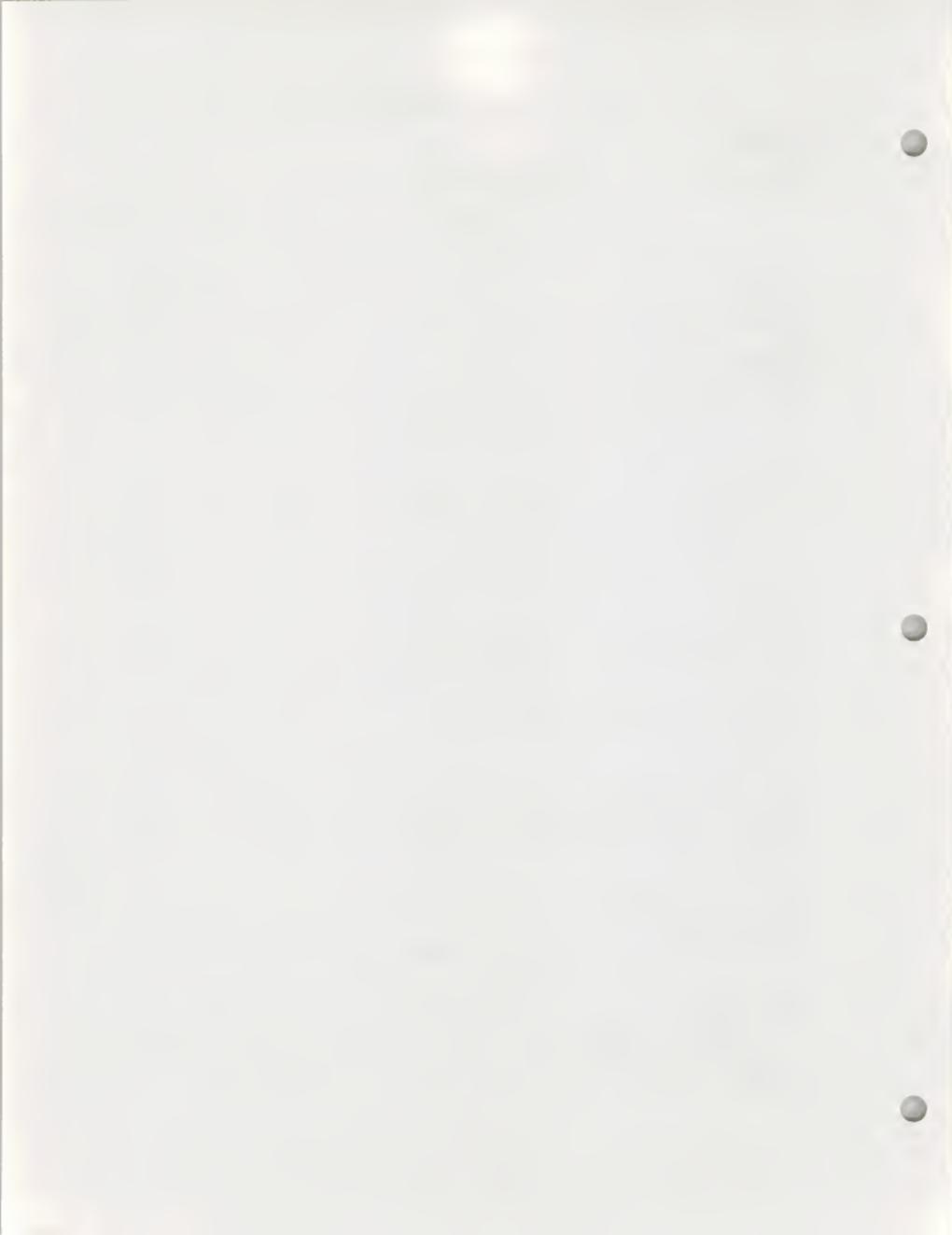
TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
<hr/>								
TRICHOPTERA					56	5008		
Arctopyche grandis	5	9	10	8	32	1	80	22
Brachycentrus occidentalis	6	7	10	9	32	1	80	18
Cheumatopsyche spp.	119	164	162	120	565	16	1413	251
Glossosoma sp.	0	1	0	0	1	0	3	5
Hydropsyche (Ceratopsyche) sp.1	74	87	152	113	426	12	1065	344
(Hydropsyche) sp.1	89	190	238	421	938	26	2345	1390
Oecetis sp.	0	1	0	0	1	0	3	5
Zumatrixchia sp.	0	6	1	1	8	0	20	27
LEPIDOPTERA								
Petrophila sp.	0	8	4	5	17	0	43	33
OLIGOCHAETA								
Lumbricidae	2	7	0	1	10	0	25	31
TURBELLARIA	1	0	1	0	2	0	5	6
<hr/>								
TOTAL NUMBER	406	796	824	1532	3558	100	8895	4689
TOTAL TAXA	27	37	32	38	46		34	5
S.W. DIVERSITY	3.22	3.76	3.39	4.02	3.84		3.60	0.36
EQUITABILITY	0.49	0.53	0.47	0.62	0.45		0.53	0.07
BIOTIC INDEX					2.70			
BIOT. COND. INDEX					52			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 20 (CFR @ Harper)
 DATE: August 13, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	1	5	3	5	14	19	1563	
Atherix pachypus	6	1	11	22	40	0	35	19
Cardiocladius spp.	8	9	17	23	57	1	100	90
Cricotopus								
(C.) bicinctus gp	0	1	0	0	1	0	3	5
(C.) tremelus gp	0	2	0	3	5	0	13	15
(C.) trifascia gp	1	6	6	5	18	1	45	24
/Orthocladius	0	4	0	0	4	0	10	20
Eukiefferiella								
claripennis gp	0	0	0	1	1	0	3	5
Hexatoma sp.	5	3	2	0	10	0	25	21
Micropsectra sp.	2	1	4	4	11	0	28	15
Nanocladius parvulus gp	0	1	0	0	1	0	3	5
Orthocladius sp.								
(Orthocladius) sp.	0	2	0	0	2	0	5	10
(Eudactocladius) sp	0	0	0	1	1	0	3	5
Polypedilum sp.	3	11	11	18	43	1	108	61
Potthastia gaedii gp	0	0	0	1	1	0	3	5
Rheotanytarsus sp.	2	15	5	9	31	1	78	56
Simulium sp.	44	13	19	301	377	12	943	1385
Stillobezzini	0	1	0	0	1	0	3	5
Thienemannimyia gp	0	1	0	0	1	0	3	5
Tvetenia sp.	0	0	1	5	6	0	15	24
EPHEMEROPTERA								
Attenella margarita	1	8	2	4	15	0	38	31
Baetis bicaudatus	0	0	0	1	1	0	3	5
Baetis insignificans	21	79	44	72	216	7	540	267
Baetis tricaudatus	53	19	124	137	333	10	833	565
Drunella grandis	0	2	0	1	3	0	8	10
Psuedocloeon sp.	0	0	0	1	1	0	3	5
Rhithrogena hageni	2	42	3	4	51	2	128	195
Seratella tibialis	2	0	1	3	6	0	15	13
Tricorythodes minutus	0	6	2	8	16	0	40	37
COLEOPTERA								
Optioservus								
quadrimaculatus	0	4	1	1	6	0	15	17
divergins/pecosensis	2	1	2	5	10	0	25	17
Zaitzevia parva	2	0	4	1	7	0	18	17



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 20 (Concluded)

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
PLECOPTERA								
<i>Doroneuria theodora</i>	4	2	1	0	7	2	153	
<i>Hesperoperla pacifica</i>	0	1	0	1	2	0	5	6
<i>Isogenoides</i> sp.	2	7	2	3	14	0	35	24
<i>Pteronarcella badia</i>	11	0	10	12	33	1	83	56
<i>Pteronarcys californica</i>	0	0	1	4	5	0	13	19
TRICHOPTERA								
<i>Arctopsyche grandis</i>	8	2	24	17	51	58	4715	
<i>Brachycentrus occidentalis</i>	2	10	6	10	28	1	70	38
<i>Cheumatopsyche</i> spp.	82	14	57	56	209	6	523	282
<i>Glossosoma</i> sp.	1	1	0	0	2	0	5	6
<i>Hydropsyche</i> (<i>Ceratopsyche</i>) sp.1	49	15	49	42	155	5	388	162
(<i>Hydropsyche</i>) sp.1	457	130	354	499	1440	44	3600	1650
<i>Zumatrixchia</i> sp.	1	0	0	0	1	0	3	5
LEPIDOPTERA								
<i>Petrophila</i> sp.	1	0	1	0	2	0	5	6
<hr/>								
TOTAL NUMBER	773	418	768	1280	3239	100	8098	3548
TOTAL TAXA	26	31	29	33	45		30	3
S.W. DIVERSITY	2.32	3.50	2.85	2.88	3.02		2.89	0.48
EVENESS	0.49	0.71	0.59	0.57	0.55		0.59	0.09
EQUITABILITY	0.26	0.52	0.35	0.31	0.25		0.36	0.11
BIOTIC INDEX					2.81			
BIOT. COND. INDEX					53			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 22 (CFR @ Huson)
 DATE: August 13, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	10	11	14	4	39	1	98	42
Atherix pachypus	5	10	15	17	47	1	118	54
Cardiocladius spp.	1	36	16	19	72	1	180	144
Cladotanytarsus vanderwulpi gp	1	0	0	0	1	0	3	5
Cricotopus								
(C.) bicintus gp	0	0	1	3	4	0	10	14
(C.) tremelus gp	0	0	0	2	2	0	5	10
(C.) trifascia gp	1	11	10	5	27	0	68	46
/Orthocladius	0	0	1	0	1	0	3	5
Micropsectra sp.	7	0	3	10	20	0	50	44
Nanocladius parvulus gp	0	0	1	0	1	0	3	5
Polypedilum spp.	10	22	13	8	53	1	133	62
Rheotanytarsus sp.	8	6	1	6	21	0	53	30
Simulium sp.	18	345	82	233	678	12	1695	1477
Synorthocladius sp.	0	0	1	0	1	0	3	5
Thienemannimyia gp	2	1	1	0	4	0	10	8
Tvetenia sp.	5	19	6	11	41	1	103	64
EPHEMEROPTERA								
Attenella margarita	5	5	0	1	11	13	1838	
Baetis insignificans	70	21	104	54	249	4	623	345
Baetis tricaudatus	30	137	161	122	450	8	1125	573
Psuedocloeon sp.	2	0	0	0	2	0	5	10
Rhithrogena sp.	3	2	3	2	10	0	25	6
Seratella tibialis	3	0	1	0	4	0	10	14
Tricorythodes minutus	5	1	0	3	9	0	23	22
COLEOPTERA								
Optioservus						2	243	
quadrimaculatus	2	2	7	0	11	0	28	30
divergens/pecosensis	9	4	17	15	45	1	113	59
Zaitzevia parva	6	15	6	14	41	1	103	49
PLECOPTERA								
Doroneuria theodora	7	9	1	2	19	2	255	
Isogenoides sp.	10	21	6	0	37	0	48	39
Pteronarcella badia	4	22	6	3	35	1	93	88
Pteronarcys californica	0	3	0	0	3	1	88	89
Skwala sp.	3	1	2	2	8	0	20	8



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 22 (Concluded)

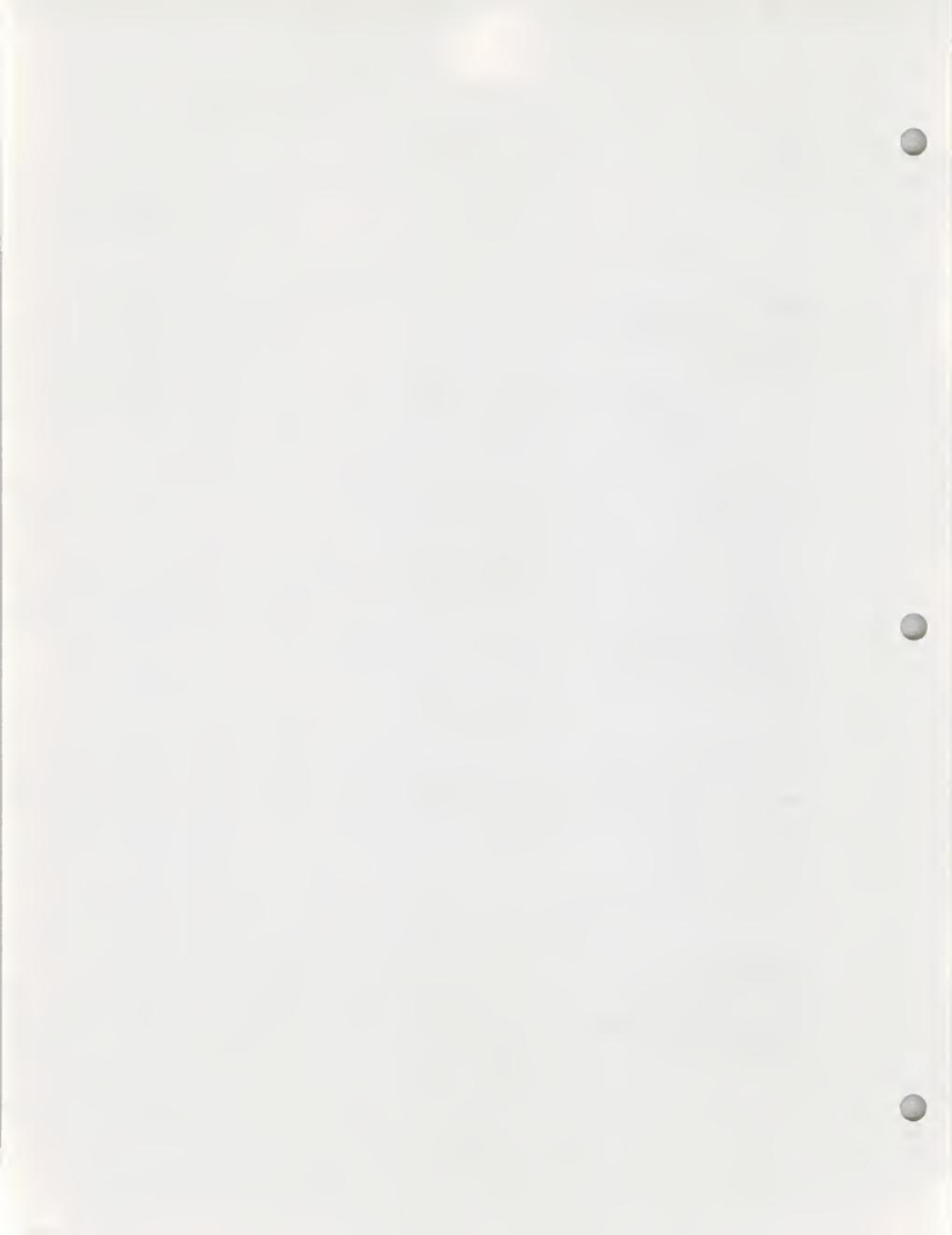
TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
TRICHOPTERA								
Arctopsyche grandis	1	1	2	9	13	65	9083	
Brachycentrus						0	33	39
occidentalis	4	7	8	6	25	0	63	17
Ceraclea sp. 1	0	0	1	0	1	0	3	5
Cheumatopsyche spp.	112	48	88	50	298	5	745	310
Glossosoma sp.	1	1	0	0	2	0	5	6
Hydropsyche								
(Ceratopsyche) sp.1	31	26	53	78	188	3	470	238
(Hydropsyche) sp.1	261	930	737	1174	3102	56	7755	3868
Hydroptila sp.	0	0	2	0	2	0	5	10
Oecetis sp.	2	0	0	0	2	0	5	10
LEPIDOPTERA								
Petrophila sp.	1	0	3	0	4	0	10	14
HEMIPTERA								
corixid nymph	0	1	0	0	1	0	3	5
<hr/>								
TOTAL NUMBER	640	1718	1373	1853	5584	100	13960	5430
TOTAL TAXA	32	28	32	25	42		29	3
S.W. DIVERSITY	3.08	2.35	2.54	2.10	2.52		2.52	0.41
EQUITABILITY	0.37	0.25	0.25	0.23	0.19		0.28	0.06
BIOTIC INDEX					2.93			
BIOT. COND. INDEX					54			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 23 (CFR @ Alberton)
 DATE: August 13, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN STAND	
	A	B	C	D			#/m ²	DEV
DIPTERA								
unassoc. chiron pupa	6	9	11	11	37	1	93	24
Atherix pachypus	0	1	1	1	3	0	8	5
Cardiocladius spp.	3	4	6	15	28	1	70	55
Cricotopus								
(C.) bicinctus gp	1	2	1	0	4	0	10	8
(C.) tremelus gp	5	6	3	5	19	0	48	13
(C.) trifascia gp	3	1	1	0	5	0	13	13
/Orthocladius	1	2	1	1	5	0	13	5
Micropsectra sp.	1	1	0	7	9	0	23	32
Microtendipes								
pedellus gp	2	3	2	2	9	0	23	5
Monodiamesa sp.	1	0	0	0	1	0	3	5
Nanocladius								
parvulus gp	0	0	1	0	1	0	3	5
Orthocladius sp.								
(Euorthocladius) sp	1	0	0	0	1	0	3	5
Potthastia gaedii gp	1	0	0	0	1	0	3	5
Polypedilum sp.	15	24	18	27	84	2	210	55
Rheotanytarsus sp.	2	7	0	0	9	0	23	33
Palpomyia complex	0	0	1	0	1	0	3	5
Thienemannimyia gp	0	1	1	1	3	0	8	5
Tvetenia sp.	1	0	0	2	3	0	8	10
EPHEMEROPTERA								
Attenella margarita	1	6	1	2	10	0	25	24
Baetis bicaudatus	0	0	1	0	1	0	3	5
Baetis insignificans	109	84	80	76	349	9	873	149
Baetis tricaudatus	43	13	17	16	89	2	223	139
Drunella grandis	0	1	3	3	7	0	18	15
Heptagenia sp.	3	7	5	2	17	0	43	22
Psuedocloeon sp.	0	2	3	1	6	0	15	13
Seratella tibialis	1	0	0	1	2	0	5	6
Tricorythodes								
minutus	5	10	10	9	34	1	85	24
COLEOPTERA								
Optioservus							1	115
quadrimaculatus	8	5	3	6	22	1	55	21
divergins/pecosensi	7	4	1	5	17	0	43	25
Zaitzevia parva	2	3	1	1	7	0	18	10



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 23 (Concluded)

TAXON	A	B	C	D	SUM	%RA	MEAN	STAND
					#/m ²		#/m ²	DEV
PLECOPTERA								
<i>Doroneuria theodora</i>	1	1	1	0	3	0	8	5
<i>Hesperoperla pacifica</i>	0	0	2	2	4	0	10	12
<i>Isogenoides</i> sp.	14	24	11	7	56	1	140	73
<i>Pteronarcella badia</i>	5	2	4	3	14	0	35	13
<i>Pteronarcys californica</i>	0	0	0	1	1	0	3	5
<i>Skwala</i> sp.	2	0	1	1	4	0	10	8
TRICHOPTERA								
<i>Arctopsyche grandis</i>	1	0	17	2	20	1	50	80
<i>Brachycentrus occidentalis</i>	0	3	6	1	10	0	25	26
<i>Ceraclea</i> sp. 1	5	2	1	4	12	0	30	18
<i>Ceraclea</i> sp. 2	0	0	0	1	1	0	3	5
<i>Cheumatopsyche</i> spp.	236	188	297	342	1063	27	2658	676
<i>Hydropsyche</i>								
(<i>Ceratopsyche</i>) sp. 1	144	89	306	231	770	19	1925	956
(<i>Hydropsyche</i>) sp. 1	154	122	384	299	959	24	2398	1232
<i>Hydropsyila</i> sp.	1	5	0	0	6	0	15	24
<i>Oecetis</i> sp.	2	1	0	3	6	0	15	13
<i>Psychomyia flava</i> ida	5	12	19	23	59	1	148	79
<i>Zumatrchia</i> sp.	10	16	10	40	76	2	190	143
LEPIDOPTERA								
<i>Petrophila</i> sp.	18	27	29	35	109	3	273	70
ODONATA								
<i>Ophiogomphus</i> sp.	0	0	0	1	1	0	3	5
<hr/>								
TOTAL NUMBER	820	688	1260	1190	3958	100	9895	2787
TOTAL TAXA	36	34	36	37	49		36	1
S.W. DIVERSITY	3.12	3.44	2.77	2.98	3.10		3.08	0.28
EQUITABILITY	0.34	0.46	0.26	0.30	0.25		0.34	0.09
BIOTIC INDEX					2.87			
BIOT. COND. INDEX					53			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 24 (CFR @ Superior)
 DATE: August 13, 1986
 SAMPLE TYPE: modified hess

TAXON		A	B	C	D	SUM	%RA	MEAN #/m ²	STAND DEV
DIPTERA									
unassoc. chiron pupa	15	10	17	3		45	16	833	
Antocha sp.	1	2	2	2		7	2	113	62
Cladotanytarsus							0	18	5
vanderwulpi gp	0	3	2	0		5	0	13	15
Cricotopus									
(C.) bicinctus gp	1	2	2	0		5	0	13	10
(C.) tremelus GP	0	1	4	2		7	0	18	17
/Orthocladius	1	1	2	0		4	0	10	8
Eukiefferiella									
coerulescens gp	1	0	0	0		1	0	3	5
Hexatoma sp.	0	1	0	0		1	0	3	5
Micropsectra sp.	8	3	2	0		13	1	33	34
Microtendipes									
pedellus gp	7	4	6	4		21	1	53	15
Orthocladius sp.									
(Euorthocladius) sp	0	0	0	1		1	0	3	5
(Orthocladius) sp.	0	0	0	1		1	0	3	5
Pagastia sp.	1	1	1	2		5	0	13	5
Polypedilum sp.	29	24	30	27		110	5	275	26
Rheotanytarsus sp.	29	37	18	12		96	4	240	112
Simulium sp.	0	0	0	1		1	0	3	5
Thienemannimyia sp.	5	2	0	1		8	0	20	22
Tvetenia sp.	0	1	1	0		2	0	5	6
EPHEMEROPTERA									
Attenella margarita	6	1	4	1		12	11	608	
Ameletus sp.	1	0	0	0		1	1	30	24
Baetis insignificans	51	24	19	21		115	5	288	150
Baetis tricaudatus	35	13	18	13		79	4	198	104
Drunella grandis	1	3	3	2		9	0	23	10
Epemerella									
inermis/infrequens	1	0	0	1		2	0	5	6
Seratella tibialis	1	3	2	1		7	0	18	10
Tricorythodes									
minutus	10	3	5	0		18	1	45	42
COLEOPTERA									
Zaitzevia parva	2	1	0	2		5	1	63	
Optioservus							0	13	10
quadrimaculatus	1	3	4	3		11	1	28	13
divergens/pecosensis	4	0	1	4		9	0	23	21



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 24 (Concluded)

TAXON	A	B	C	D	SUM	%RA	MEAN #/m ²	STAND DEV
PLECOPTERA								
<i>Claassinia sabulosa</i>	0	0	1	0	1	1	60	
<i>Doroneuria theodora</i>	4	1	2	1	8	0	20	14
<i>Hesperoperla pacifica</i>	0	1	0	0	1	0	3	5
<i>Isogenoides</i> sp.	6	3	3	2	14	1	35	17
TRICHOPTERA								
<i>Arctopsyche grandis</i>	3	9	2	4	18	1	45	31
<i>Brachycentrus occidentalis</i>	2	1	1	4	8	0	20	14
<i>Ceraclea</i> sp. 1	0	0	2	0	2	0	5	10
<i>Cheumatopsyche</i> spp.	152	145	118	65	480	22	1200	395
<i>Hydropsyche</i>								
(<i>Ceratopsyche</i>) spp.	51	72	24	35	182	8	455	209
(<i>Hydropsyche</i>) spp.	97	117	100	90	404	19	1010	115
<i>Hydropsyche</i> sp.	1	2	7	2	12	1	30	27
<i>Luecotrichia</i> sp.	0	0	2	0	2	0	5	10
<i>Oecetis</i> sp.	3	1	0	0	4	0	10	14
<i>Psychomyia flava</i> ida	114	37	91	86	328	15	820	324
<i>Zumatrachia</i> sp.	3	2	2	4	11	1	28	10
LEPIDOPTERA								
<i>Petrophila</i> sp.	22	17	11	13	63	3	158	49
OLIGOCHAETA								
<i>Lumbricidae</i>	6	1	0	0	7	0	18	29
<hr/>								
TOTAL NUMBER	675	552	509	410	2146	100	5365	1098
TOTAL TAXA	34	35	33	30	46		33	2
S.W. DIVERSITY	3.57	3.38	3.46	3.44	3.56		3.46	0.08
EQUITABILITY	0.50	0.43	0.48	0.52	0.37		0.48	0.04
BIOTIC INDEX					2.73			
BIOT. COND. INDEX					52			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 25 (CFR above Flathead River)
 DATE: August 13, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN #/m ²	STAND DEV
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	2	3	6	6	17	2	43	21
Antocha sp.	0	1	0	0	1	0	3	5
Cladotanytarsus vanderwulpi gp	0	0	1	0	1	0	3	5
Cricotopus (C.) bicinctus gp	6	3	2	11	22	2	55	40
(C.) tremelus gp	0	1	0	0	1	0	3	5
/Orthocladius	1	0	1	0	2	0	5	6
Eukiefferiella coerulescens gp	1	0	0	0	1	0	3	5
Micropsectra sp.	3	1	0	6	10	1	25	26
Microtendipes pedellus gp	12	1	15	22	50	5	125	87
Orthocladius sp. (Orthocladius) sp.	0	1	0	1	2	0	5	6
Phaenopspectra sp.	0	0	0	3	3	0	8	15
Polypedilum sp.	6	4	5	8	23	2	58	17
Rheotanytarsus sp.	26	7	2	24	59	6	148	120
Tanytarsus sp.	2	0	1	0	3	0	8	10
Thienemannimyia gp	0	0	2	6	8	1	20	28
Tvetenia sp.	3	0	0	1	4	0	10	14
EPHEMEROPTERA								
Attenella margarita	0	1	0	0	1	0	3	5
Ameletus sp.	1	1	0	0	2	0	5	6
Baetis insignificans	8	15	4	7	34	3	85	47
Baetis tricaudatus	0	1	0	0	1	0	3	5
Drunella grandis	0	0	0	1	1	0	3	5
Epeorus albertae	0	2	0	0	2	0	5	10
Ephemerella inermis/infrequens	0	0	1	1	2	0	5	6
Heptagenia solitaria	1	0	0	0	1	0	3	5
Paraleptophlebia bicornuta	1	1	1	5	8	1	20	20
Seratella tibialis	2	0	0	0	2	0	5	10
Tricorythodes minutus	3	1	0	2	6	1	15	13
COLEOPTERA								
Zaitzevia parva	1	1	0	1	3	0	8	5
Optioservus divergins/pecosensis	1	0	1	0	2	0	5	6



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 25 (Concluded)

TAXON	A	B	SAMPLE # C	D	SUM	%RA	MEAN #/m ²	STAND DEV
PLECOPTERA								
Isogenoides sp.	4	6	11	7	28	3	70	29
TRICHOPTERA								
Arctopsyche grandis	2	0	0	0	2	65	1618	
Brachycentrus occidentalis	2	0	0	0	2	0	5	10
Ceraclea sp. 1	2	2	6	5	15	2	38	21
Cheumatopsyche spp.	105	39	57	127	328	33	820	409
Hydropsyche (Ceratopsyche) sp.1	43	1	13	45	102	10	255	219
(Hydropsyche) sp.1	15	3	5	12	35	4	88	57
Hydroptila sp.	0	1	0	2	3	0	8	10
Luecotrichia sp.	3	1	3	1	8	1	20	12
Oecetis sp.	0	1	0	0	1	0	3	5
Psychomyia flavaida	36	14	34	42	126	13	315	122
Zumatrichia sp.	13	0	2	10	25	3	63	62
LEPIDOPTERA								
Petrophila sp.	16	1	14	16	47	5	118	72
OLIGOCHAETA								
Limnodrilus hoffmeisteri	1	0	0	1	2	0	5	6
PORIFERA (present)								
TOTAL NUMBER	322	114	187	373	996	100	2490	1194
TOTAL TAXA	29	26	21	26	43		26	3
S.W. DIVERSITY	3.47	3.42	3.28	3.41	3.58		3.40	0.08
EQUITABILITY	0.54	0.59	0.66	0.59	0.40		0.60	0.05
BIOTIC INDEX					2.72			
BIOT. CON. INDEX					52			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 26 (Flathead River near mouth)
 DATE: August 14, 1986
 SAMPLE TYPE: traveling kick
 SAMPLE #

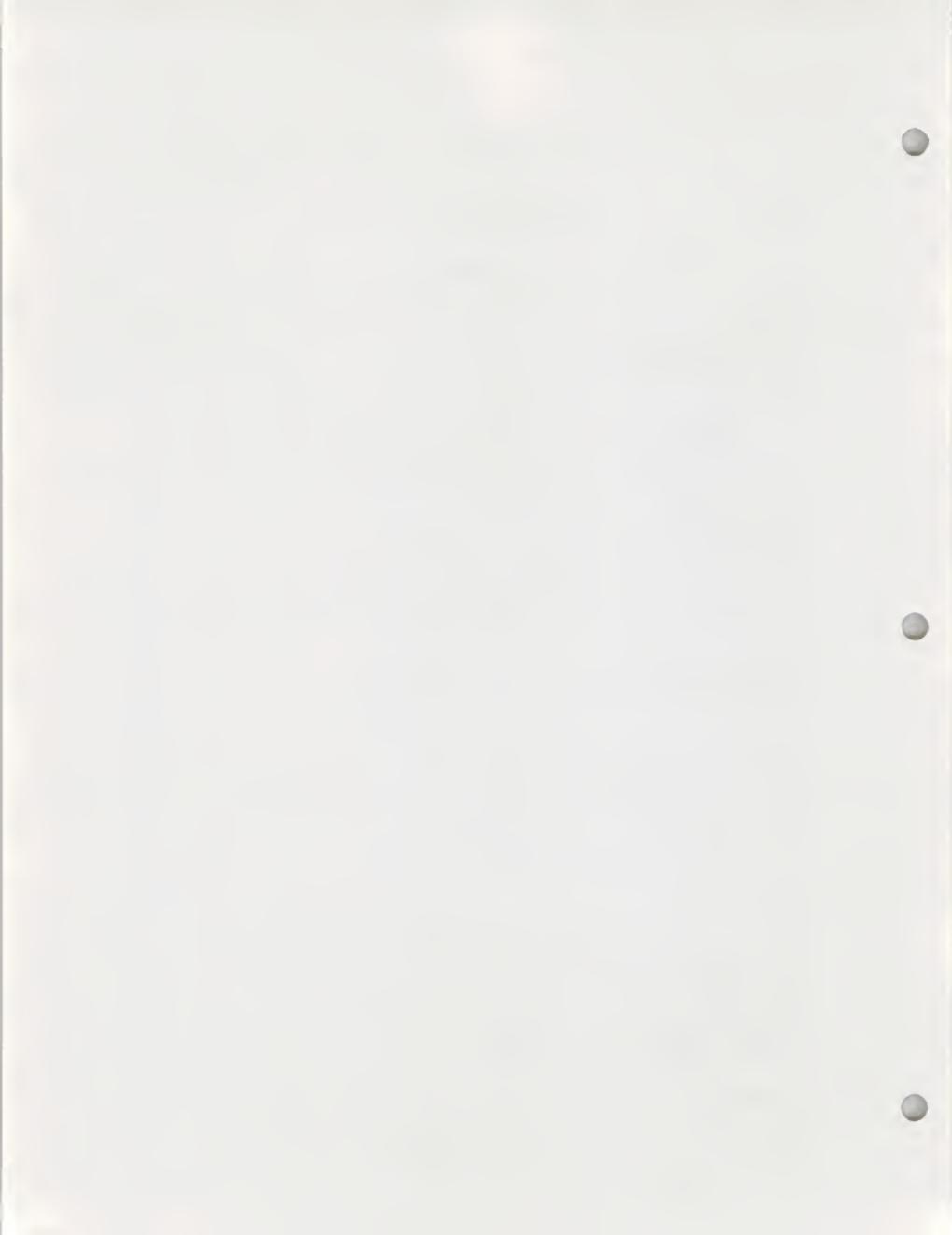
TAXON	A	%RA
DIPTERA		9
unassoc. chiron pupa	1	1
<i>Microtendipes</i>		
<i>pedellus</i> gp	3	2
<i>Nanocladius</i>		
<i>parvulus</i> gp	2	2
<i>Paracladopelma</i> sp.	1	1
<i>Polypedilum</i> sp.	1	1
<i>Potthastia</i>		
<i>longimana</i> gp	1	1
<i>Rheotanytarsus</i> sp.	2	2
EPHEMEROPTERA		52
<i>Baetis insignificans</i>	3	2
<i>Baetis tricaudatus</i>	3	2
<i>Heptagenia soltari</i>	17	14
<i>Nixe</i> sp.	2	2
<i>Stenonema</i> sp.	38	31
COLEOPTERA		7
<i>Dubiraphia</i> sp.	4	3
<i>Zaitzevia parva</i>	4	3
LEPIDOPTERA		2
<i>Petrophila</i> sp.	2	2
TRICHOPTERA		21
<i>Ceraclea</i> sp. 1	7	6
<i>Cheumatopsyche</i> spp.	17	14
<i>Polycentropus</i> sp.	1	1
ODONATA		-
<i>Ophiogomphus</i> sp.	1	1
AMPHIPODA		
<i>Hyalella azteca</i>	3	2
MOLLUSCA		
<i>Gyraulus</i> sp.	8	7
TOTAL NUMBER	121	100
TOTAL TAXA	20	
S.W. DIVERSITY	3.36	
EQUITABILITY	0.73	
BIOTIC INDEX	2.31	
BIOT. CON. INDEX	72	



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 27 (CFR above Thompson Falls Reservoir)
 DATE: August 14, 1986
 SAMPLE TYPE: traveling kick

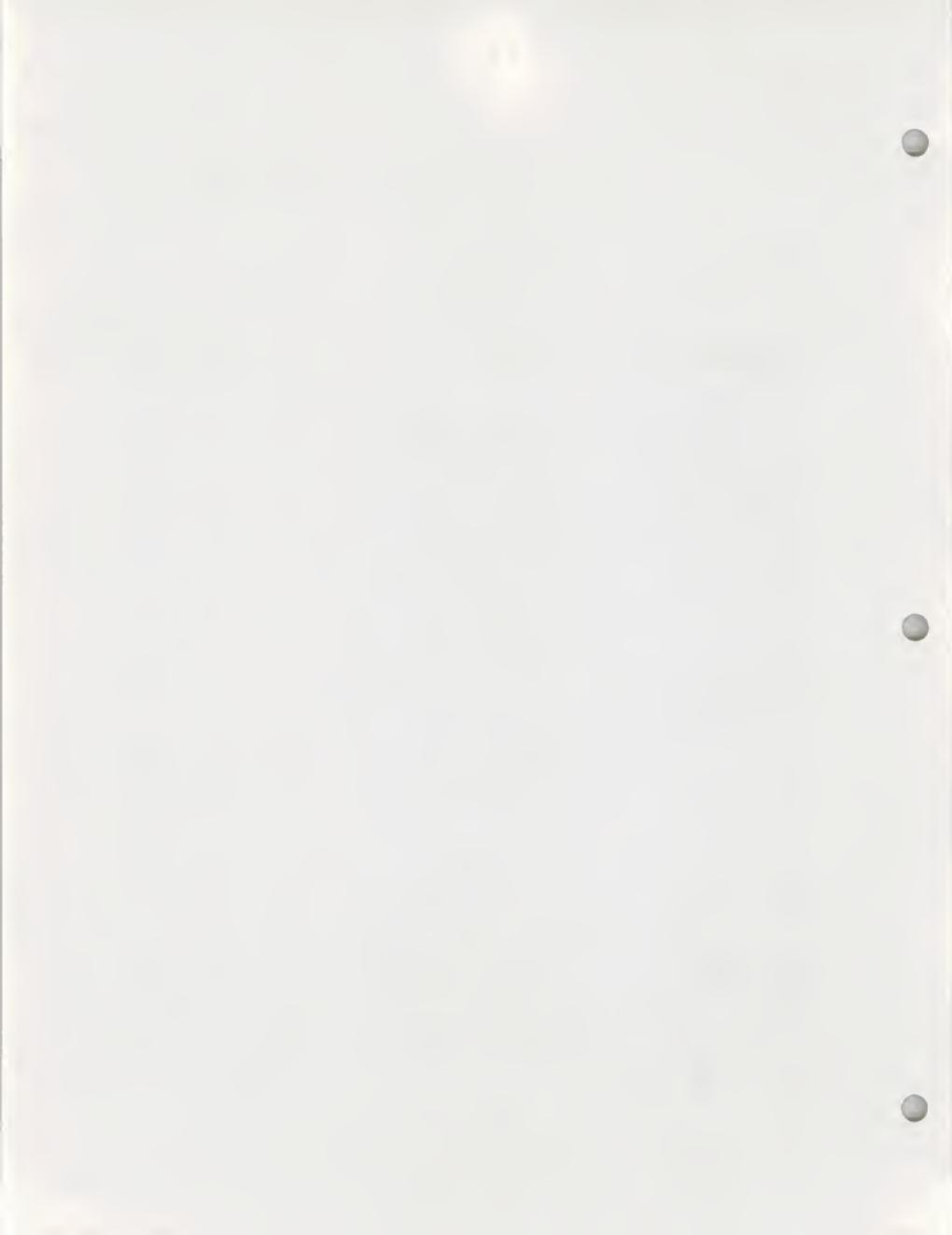
TAXON	SAMPLE #				SUM	%RA	MEAN	STAND DEV
	A	B	C	D				
DIPTERA								
unassoc. chiron pupa	10	15	34	10	69	2	17	11
Cladotanytarsus vanderwulpi gp	77	55	161	87	380	13	95	46
Cricotopus (C.) bicinctus gp	9	15	7	26	57	2	14	9
/Orthocladius	0	1	3	3	7	0	2	2
Dicrotendipes sp.	1	0	1	0	2	0	1	1
Micropsectra sp.	12	4	7	14	37	1	9	5
Microtendipes pedellus gp	4	7	24	19	54	2	14	10
Orthocladius sp. (Orthocladius) sp.	0	1	1	3	5	0	1	1
Polypedilum sp.	17	12	13	18	60	2	15	3
Pseudochironomus sp.	0	1	4	7	12	0	3	3
Rhectanytarsus sp.	4	8	17	16	45	2	11	6
Simulium sp.	1	5	2	0	8	0	2	2
Synorthocladius sp.	2	2	0	6	10	0	3	3
Tanytarsus sp.	1	1	2	2	6	0	2	1
Thienemannimyia gp	7	3	9	10	29	1	7	3
Tvetenia sp.	3	10	8	22	43	1	11	8
EPHEMEROPTERA								
Attenella margarita	0	0	2	5	7	0	2	2
Baetis insignificans	2	12	5	9	28	1	7	4
Baetis tricaudatus	2	1	1	4	8	0	2	1
Drunella grandis	1	1	0	0	2	0	1	1
Epeorus albertae	0	1	0	1	2	0	1	1
Heptagenia soltaria	4	1	3	3	11	0	3	1
Stenonema sp.	77	72	43	107	299	10	75	26
Tricorythodes minutus	5	1	4	17	27	1	7	7
Timpango hecuba	6	3	6	3	18	1	5	2
COLEOPTERA								
Oreodytes sp.2	0	1	0	3	4	0	1	1
Optioservus quadrimaculatus	1	0	0	0	1	0	0	1
divergens/pecosensi	2	2	1	1	6	0	2	1
Zaitzevia parva	31	36	20	34	121	4	30	7
PLECOPTERA								
Doroneuria theodora	2	3	2	1	8	0	2	1
Isogenoides sp.	0	1	0	2	3	0	1	1



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 27 (Concluded)

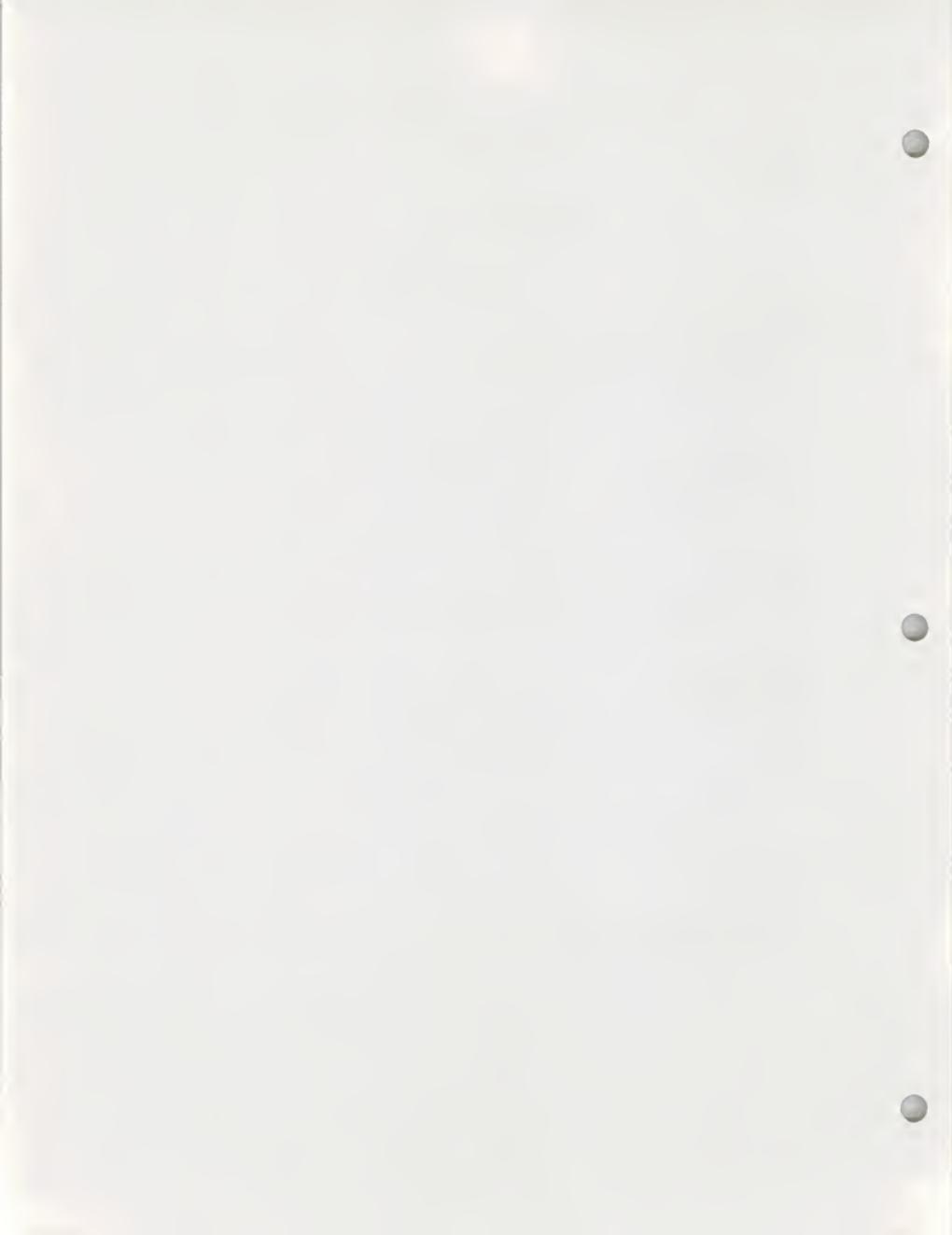
TAXON	SAMPLE #				SUM	%RA	MEAN	STAND DEV
	A	B	C	D				
TRICHOPTERA								
Ceraclea sp. 1	33	11	16	18	78	38	274	9
Brachycentrus occidentalis	0	1	0	0	1	0	0	1
Cheumatopsyche spp.	117	157	266	249	789	27	197	72
Glossosomatidae	0	1	0	0	1	0	0	1
Hydropsyche (Ceratopsyche) sp.1	27	25	71	29	152	5	38	22
(Hydropsyche) sp.1	9	12	25	11	57	2	14	7
Psychomyia flavida	4	1	5	9	19	1	5	3
LEPIDOPTERA								
Petrophila sp.	6	7	2	10	25	1	6	3
ODONATA								
Ophiogomphus sp.	6	7	4	4	21	1	5	2
MOLLUSCA								
Ferrissia sp.	7	6	10	0	23	13	95	4
Gyraulus sp.	0	0	1	6	7	0	2	3
Helisoma sp.	1	1	0	0	2	0	1	1
Lymnaea sp.	49	48	122	104	323	11	81	38
Physa sp.	4	1	3	1	9	0	2	2
Sphaerium sp.	1	12	0	2	15	1	4	6
HYDRACARINA								
	1	2	0	1	4	0	1	1
OLIGOCHAETA								
Lumbricidae	1	0	8	0	9	0	4	4
Lumbriculidae	1	4	0	0	5	0	2	2
<hr/>								
TOTAL NUMBER	548	571	913	877	2909	100	727	194
TOTAL TAXA	38	43	36	38	49		39	3
S.W. DIVERSITY	3.84	3.86	3.44	3.78	3.81		3.73	0.19
EVENESS	0.73	0.71	0.67	0.72	0.68		0.71	0.03
EQUITABILITY	0.55	0.49	0.43	0.52	0.42		0.50	0.05
BIOTIC INDEX					2.66			
BIOT. COND. INDEX					53			



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 28 (CFR below Thompson Falls Dam)
 DATE: August 14, 1986
 SAMPLE TYPE: traveling kick

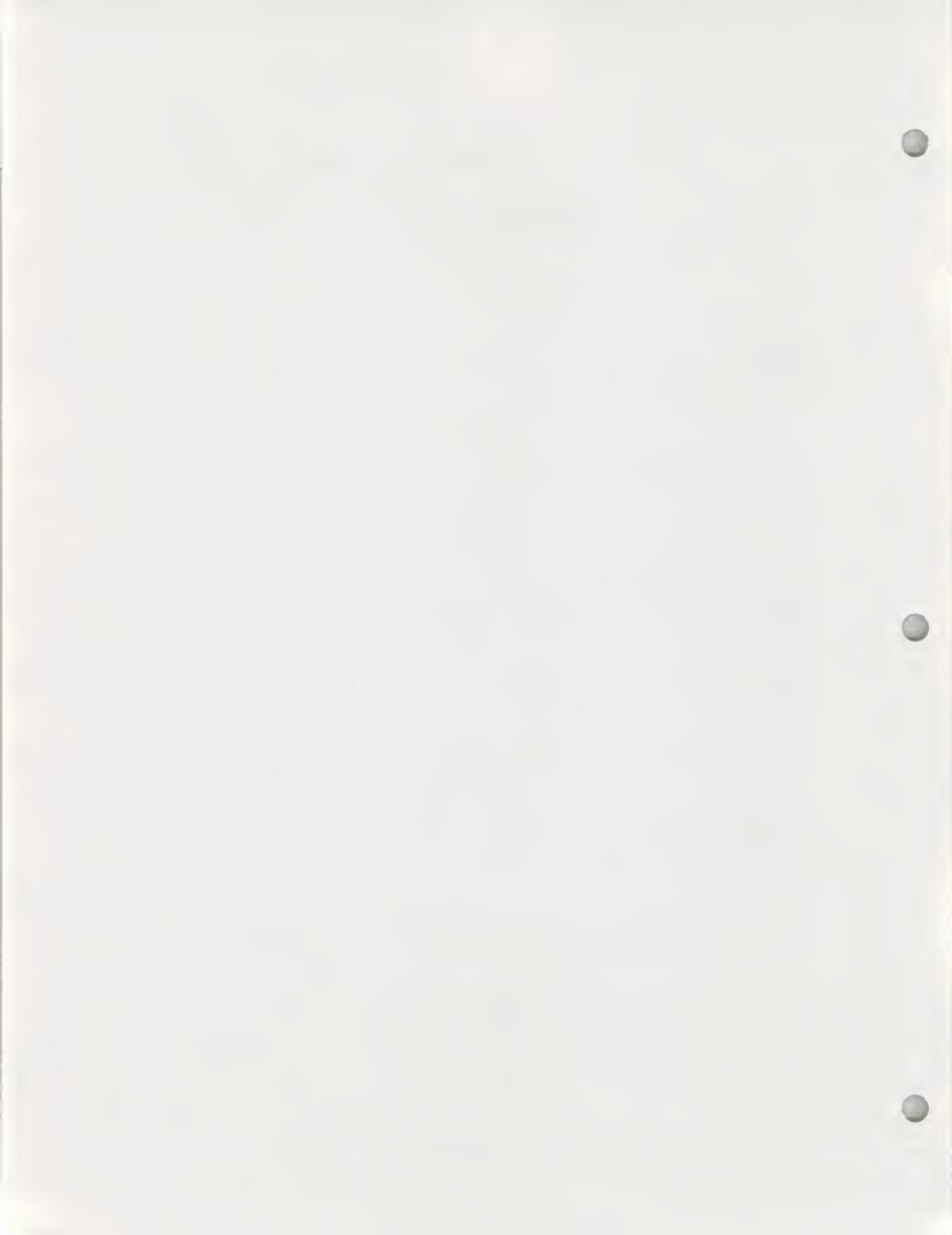
TAXON	SAMPLE #	
	A	%RA
<hr/>		
DIPTERA		64
unassoc. chiron pupa	1	2
Dicrotendipes sp.	19	33
Cricotopus (C.) or		
Orthocladius (O.)	7	12
Microtendipes		
pedellus gp	1	2
Parachironomus		
frequens gp	2	3
Rheotanytarsus sp.	5	9
Tanytarsus sp.	1	2
Thienemannimyia gp	1	2
<hr/>		
EPHEMEROPTERA		12
Ameletus sp.	3	5
Heptagenia soltaria	1	2
Stenonema sp.	2	3
Tricorythodes		
minutus	1	2
<hr/>		
TRICHOPTERA		14
Ceraclea sp. 1	2	3
Cheumatopsyche spp.	5	9
Hydropsyche		
(Ceratopsyche) sp.1	1	2
<hr/>		
OLIGOCHAETA		
Lumbricidae	6	10
<hr/>		
TOTAL NUMBER	58	100
TOTAL TAXA	15	
S.W. DIVERSITY	3.20	
EQUITABILITY	0.87	
BIOTIC INDEX	3.26	
BIOT. COND. INDEX	51	



CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 30 (CFR below Cabinet Gorge Dam)
 DATE: August 14, 1986
 SAMPLE TYPE: traveling kick

TAXON	SAMPLE # A	%RA
DIPTERA		
unassoc. chiron pupa	11	30
Cladotanytarsus van	8	6
Cryptochironomus sp.	1	4
Cricotopus		1
(C.) tremelus gp	2	1
/Orthocladius	9	5
Dicrotendipes sp.	3	2
Microtendipes		
pedellus gp	9	2
Polypedilum sp.	1	5
Rheotanytarsus sp.	1	1
Synorthocladius sp.	4	1
Tanytarsus sp.	2	2
Thienemannimyia gp	5	1
		3
EPHEMEROPTERA		
Ameletus sp.	11	57
Paraleptophlebia		6
bicornuta	74	
Stenonema sp.	4	40
Tricorythodes		2
minutus	15	8
TRICHOPTERA		
Ceraclea sp. 1	1	10
Cheumatopsyche spp.	5	1
Hydropsyche		3
(Ceratopsyche) sp.1	2	
Hydroptila sp.	8	1
Mystacides sp.	1	4
Psychomyia flavida	1	1



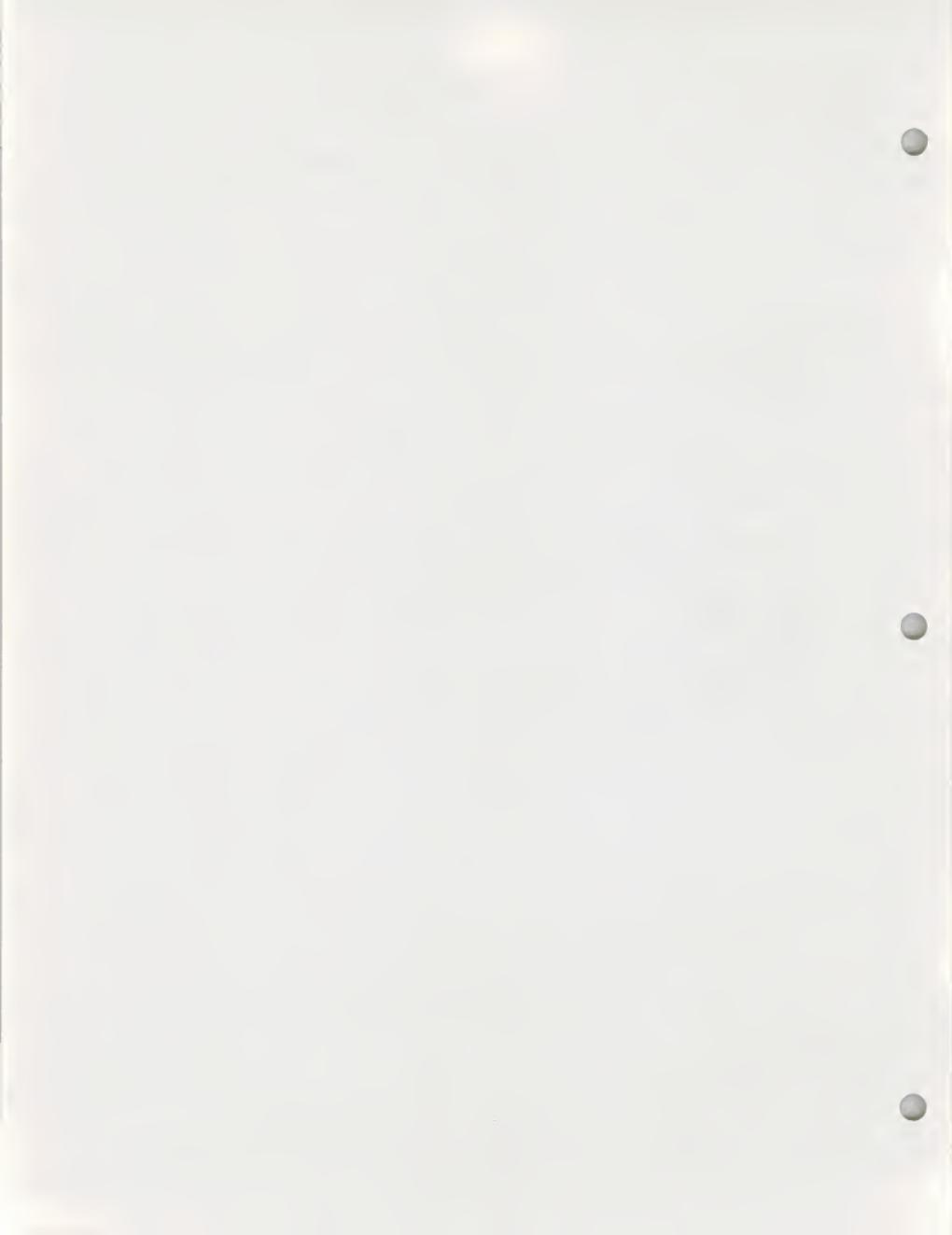
CLARK FORK RIVER MACROINVERTEBRATE DATA

STATION: 30 (Concluded)

TAXON	SAMPLE #	%RA
	A	
MOLLUSCA		2
<i>Helisoma</i> sp.	1	1
<i>Lymnaea</i> sp.	1	1
<i>Physa</i> sp.	1	1
OLIGOCHAETA		2
<i>Lumbriculidae</i>	2	1
<i>Ophiodonais</i> <i>serpentina</i>	1	1

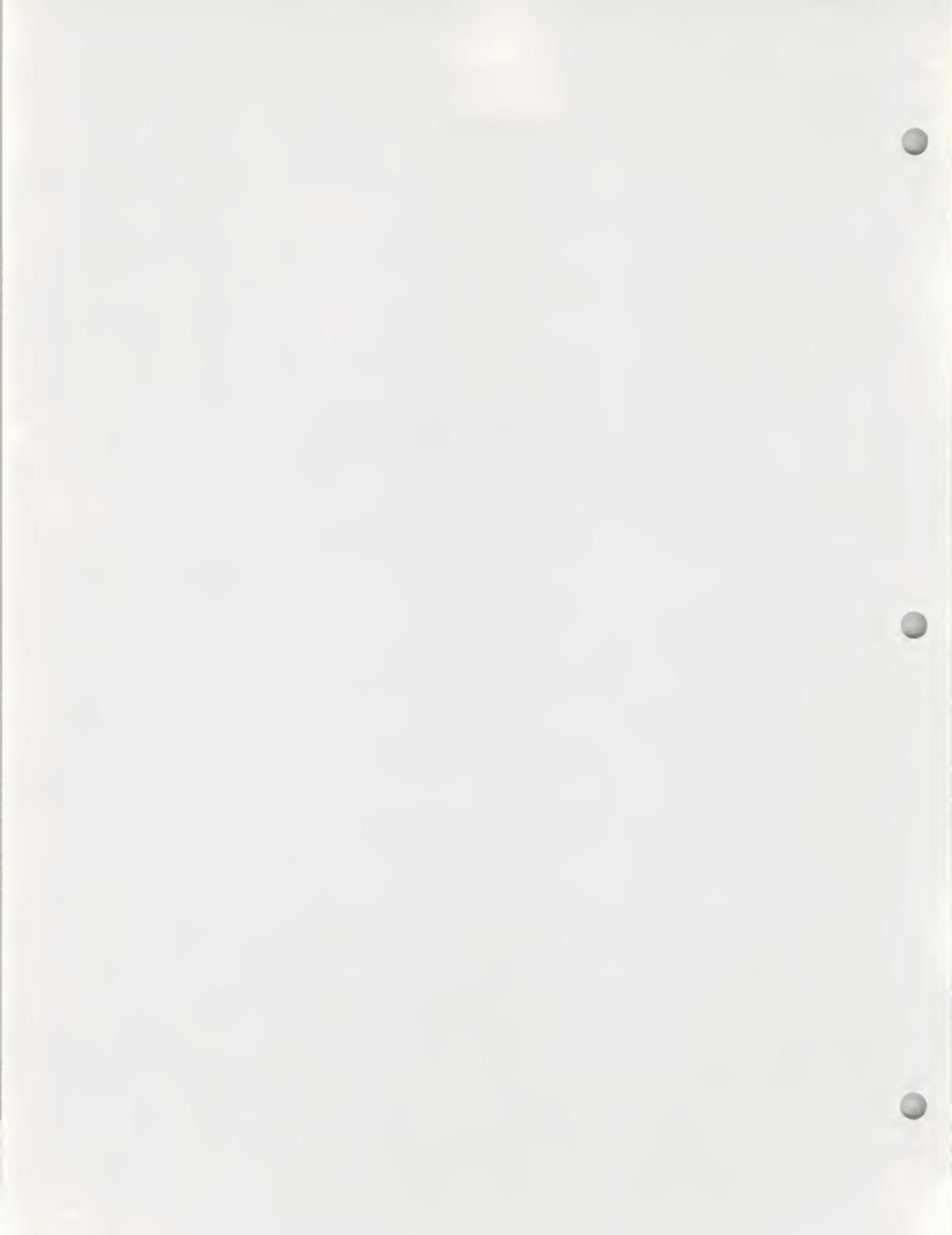
CLADOCERA (present)

TOTAL NUMBER	184	100
TOTAL TAXA	26	
S.W. DIVERSITY	3.31	
EVENESS	0.68	
EQUITABILITY	0.54	
BIOTIC INDEX	1.96	
BIOT. COND. INDEX	77	



APPENDIX D

CLARK FORK RIVER MACROINVERTEBRATE STUDY
BIOMASS DATA AND SUMMARY STATISTICS



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WEIGHT)

STATION: 1 (Silverbow Ck below Colorado tailings)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
DIPTERA	0.59	0.69	1.18	2.70	5.16	100	12.9	9.7
EPHEMEROPTERA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TRICHOPTERA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	0.6	0.7	1.2	2.7	5.2	100	12.9	9.7

STATION: 2 (Silverbow Ck @ Ramsey)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.01	0.02	0.01	0.00	0.04	16	0.1	0.1
DIPTERA	0.04	0.05	0.05	0.04	0.18	72	0.5	0.1
EPHEMEROPTERA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TRICHOPTERA	0.01	0.00	0.02	0.00	0.03	12	0.1	0.1
TOTAL WEIGHT	0.1	0.1	0.1	0.0	0.3	100	0.6	0.2

STATION: 3 (Silverbow Ck @ frontage road)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.04	0.04	0.02	0.01	0.11	19	0.3	0.2
DIPTERA	0.01	0.03	0.04	0.01	0.09	16	0.2	0.2
MEGALOPTERA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TRICHOPTERA	0.02	0.19	0.10	0.06	0.37	65	0.9	0.7
AMPHIPODA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	0.1	0.3	0.2	0.1	0.6	100	1.4	0.9



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 4 (ACM pond #2 discharge - SBC)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.16	0.03	0.09	0.05	0.33	2	0.8	0.6
DIPTERA	2.81	0.99	0.35	0.27	4.42	23	11.1	11.8
TRICHOPTERA	3.68	1.04	1.51	1.84	8.07	42	20.2	11.6
AMPHIPODA	1.80	0.96	1.24	1.71	5.71	30	14.3	4.0
HIRUDINEA	0.01	0.05	0.24	0.02	0.32	2	0.8	1.1
MOLLUSCA	0.01	0.00	0.30	0.09	0.40	2	1.0	1.4
TOTAL WEIGHT	8.5	3.1	3.7	4.0	19.3	100	48.1	24.7

STATION: 5 (Mill-Willow Cks bypass)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.00	0.00	0.01	0.01	0.02	1	0.1	0.1
DIPTERA	0.01	0.14	0.16	0.31	0.62	20	1.6	1.2
EPHEMEROPTERA	0.05	0.14	0.10	0.13	0.42	14	1.1	0.4
PLECOPTERA	0.05	0.00	0.02	0.10	0.17	6	0.4	0.4
TRICHOPTERA	0.21	0.28	0.34	1.02	1.85	60	4.6	3.8
AMPHIPODA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
MOLLUSCA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	0.3	0.6	0.6	1.6	3.1	100	7.7	5.5

STATION: 6
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.02	0.02	0.01	0.02	0.07	3	0.2	0.1
DIPTERA	0.06	0.02	0.00	0.07	0.15	6	0.4	0.3
EPHEMEROPTERA	0.05	0.04	0.02	0.01	0.12	4	0.3	0.2
PLECOPTERA	0.41	0.41	0.13	1.22	2.17	80	5.4	4.7
TRICHOPTERA	0.06	0.08	0.01	0.06	0.21	8	0.5	0.3
TOTAL WEIGHT	0.6	0.6	0.2	1.4	2.7	100	6.8	5.1



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 7(CFR below Warm Springs Creek)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.18	0.04	0.10	0.04	0.36	4	0.9	0.7
DIPTERA	0.15	0.05	0.23	0.17	0.60	6	1.5	0.7
EPHEMEROPTERA	0.18	0.03	0.04	0.09	0.34	4	0.9	0.7
MEGALOPTERA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
PLECOPTERA	1.38	0.18	0.50	0.89	2.95	31	7.4	5.2
TRICHOPTERA	2.50	0.81	0.88	0.95	5.14	55	12.9	8.1
AMPHIPODA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
MOLLUSCA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
OLIGOCHAETA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	4.4	1.1	1.8	2.1	9.4	100	23.5	14.3

STATION: 8 (CFR near Dempsey)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.03	0.11	0.07	0.14	0.35	6	0.9	0.5
DIPTERA	0.08	0.12	0.09	0.20	0.49	9	1.2	0.5
EPHEMEROPTERA	0.01	0.03	0.18	0.02	0.24	4	0.6	0.8
MEGALOPTERA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
PLECOPTERA	0.21	0.39	0.51	0.44	1.55	27	3.9	1.3
TRICHOPTERA	0.17	0.99	0.88	0.98	3.02	53	7.6	3.9
AMPHIPODA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
OLIGOCHAETA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	0.5	1.6	1.7	1.8	5.7	100	14.1	6.1



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 9 (CFR @ Deer Lodge)
DATE: August 21, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.02	0.01	0.04	0.10	0.17	1	0.4	0.4
DIPTERA	0.24	0.37	0.18	0.20	0.99	8	2.5	0.9
EPHEMEROPTERA	0.15	0.10	0.22	0.09	0.56	5	1.4	0.6
ODONATA	0.00	0.06	0.00	0.00	0.06	0	0.2	0.3
PLECOPTERA	0.13	0.22	0.54	0.30	1.19	10	3.0	1.8
TRICHOPTERA	1.57	0.75	3.87	1.91	9.10	75	22.8	10.7
OLIGOCHAETA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	2.1	2.5	4.9	2.6	12.1	100	30.2	12.4

STATION: 10 (CFR above Little Blackfoot R.)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.01	0.05	0.03	0.01	0.10	0	0.3	0.2
DIPTERA	0.17	0.44	1.42	1.59	3.62	18	9.1	7.0
EPHEMEROPTERA	0.49	0.21	0.46	0.40	1.56	8	3.9	1.3
ODONATA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
PLECOPTERA	0.49	1.24	0.78	0.30	2.81	14	7.0	4.1
TRICHOPTERA	2.28	3.00	2.44	4.72	12.44	61	31.1	11.2
TOTAL WEIGHT	3.4	4.9	5.1	7.0	20.5	100	51.3	14.7



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 11 (CFR @ Gold Creek)
DATE: August 21, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.01	0.00	0.01	0.02	0.04	1	0.1	0.1
DIPTERA	0.56	0.14	0.16	0.44	1.30	17	3.3	2.1
EPHEMEROPTERA	0.10	0.20	0.12	0.08	0.50	7	1.3	0.5
PLECOPTERA	0.16	0.08	0.28	1.40	1.92	26	4.8	6.2
TRICHOPTERA	2.08	0.22	0.26	1.19	3.75	50	9.4	8.8
TOTAL WEIGHT	2.9	0.6	0.8	3.1	7.5	100	18.8	13.2

STATION: 12 (CFR @ Bonita)
DATE: August 21, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.03	0.02	0.01	0.01	0.07	1	0.2	0.1
DIPTERA	0.94	0.79	0.98	0.52	3.23	31	8.1	2.1
EPHEMEROPTERA	0.19	0.13	0.18	0.13	0.63	6	1.6	0.3
PLECOPTERA	0.55	0.50	0.36	0.13	1.54	15	3.9	1.9
TRICHOPTERA	1.61	0.64	0.56	2.24	5.05	48	12.6	8.1
TOTAL WEIGHT	3.3	2.1	2.1	3.0	10.5	100	26.3	6.4

STATION: 13 (CFR @ Turah)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.02	0.03	0.05	0.07	0.17	1	0.4	0.2
DIPTERA	0.69	1.45	0.30	0.25	2.69	10	6.7	5.5
EPHEMEROPTERA	0.15	0.16	0.18	0.24	0.73	3	1.8	0.4
PLECOPTERA	0.99	0.12	7.32	4.58	13.01	50	32.5	33.3
TRICHOPTERA	3.35	2.08	3.24	0.78	9.45	36	23.6	12.0
TOTAL WEIGHT	5.2	3.8	11.1	5.9	26.1	100	65.1	31.7



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 14 (Blackfoot River near mouth)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.01	0.00	0.01	0.00	0.02	0	0.1	0.1
DIPTERA	0.08	0.21	0.07	0.04	0.40	9	1.0	0.8
EPHEMEROPTERA	0.01	0.02	0.03	0.03	0.09	2	0.2	0.1
PLECOPTERA	1.49	0.10	0.31	0.64	2.54	60	6.4	6.1
TRICHOPTERA	0.10	0.05	0.17	0.27	0.59	14	1.5	1.0
MOLLUSCA	0.58	0.00	0.01	0.00	0.59	14	1.5	2.9
OLIGOCHAETA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	2.3	0.4	0.6	1.0	4.2	100	10.6	8.5

STATION: 15 (CFR below Milltown Dam)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.03	0.04	0.05	0.01	0.13	1	0.3	0.2
DIPTERA	0.91	0.35	0.02	0.10	1.38	9	3.5	4.0
EPHEMEROPTERA	0.09	0.13	0.09	0.05	0.36	2	0.9	0.3
LEPIDOPTERA	0.02	0.00	0.02	0.02	0.06	0	0.2	0.1
PLECOPTERA	3.46	0.62	0.24	0.35	4.67	32	11.7	15.4
TRICHOPTERA	2.51	1.83	2.14	1.49	7.97	55	19.9	4.4
TOTAL WEIGHT	7.0	3.0	2.6	2.0	14.6	100	36.4	22.9



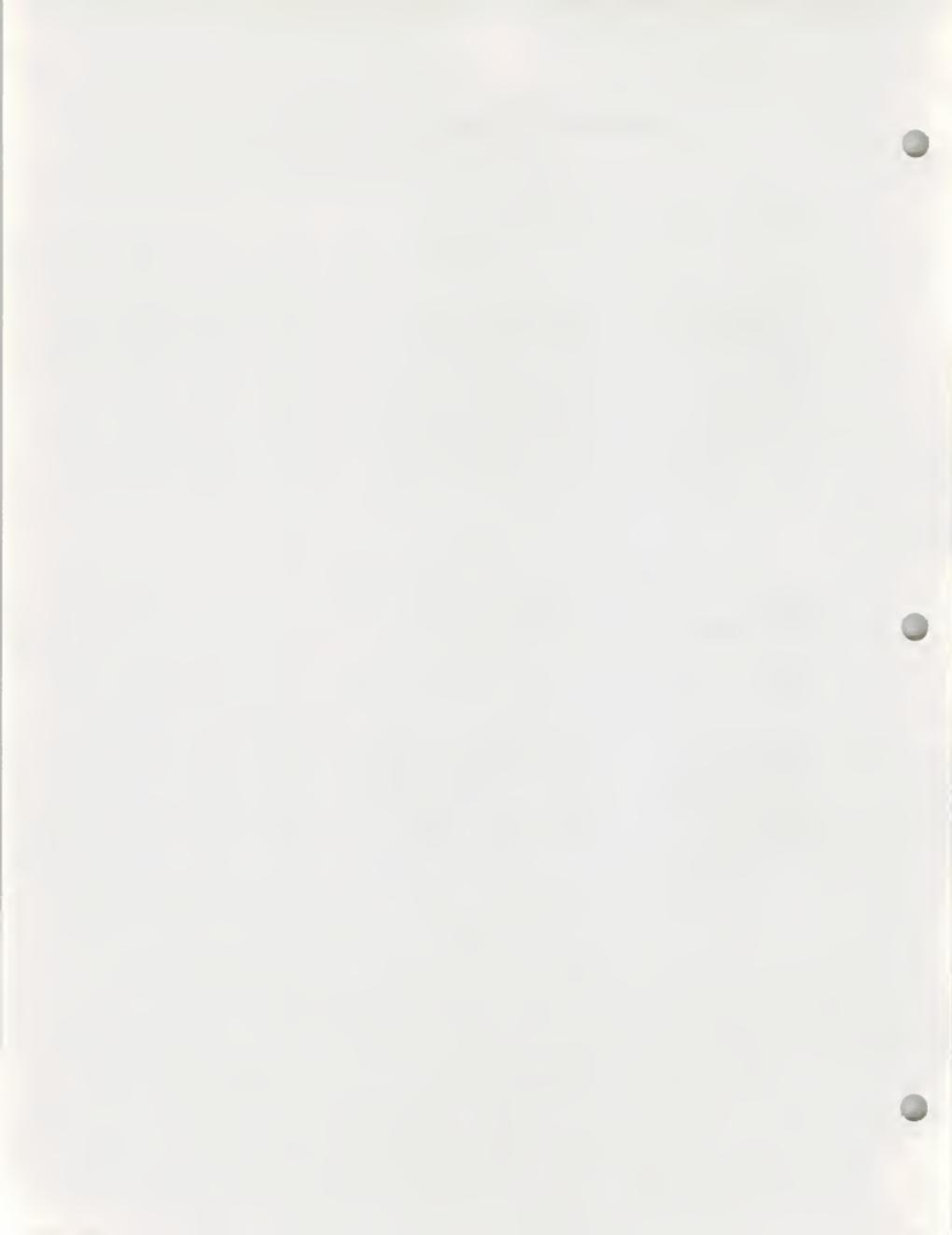
CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 16 (CFR above Missoula WWTP)
DATE: August 12, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	8.00	8.88	8.83	8.83	8.04	0	8.1	8.1
DIPTERA	8.18	8.88	8.83	8.83	8.04	0	8.1	8.1
EPHEMEROPTERA	0.03	0.02	0.03	0.07	0.15	1	0.4	0.2
LEPIDOPTERA	0.00	0.04	0.00	0.01	0.05	0	0.1	0.2
ODONATA	0.00	0.00	0.00	0.12	0.12	1	0.3	0.6
PLECOPTERA	1.69	0.74	0.40	0.81	3.64	27	9.1	5.5
TRICHOPTERA	2.30	1.19	2.38	3.15	9.02	68	22.6	8.1
OLIGOCHAETA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	4.2	2.0	2.9	4.2	13.3	100	33.2	10.8

STATION: 18 (CFR @ Shuffield's)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.00	0.01	0.00	0.00	0.01	0	0.0	0.1
DIPTERA	0.01	0.03	0.02	0.06	0.12	1	0.3	0.2
EPHEMEROPTERA	0.05	0.06	0.10	0.03	0.24	2	0.6	0.3
LEPIDOPTERA	0.00	0.01	0.03	0.02	0.06	0	0.2	0.1
PLECOPTERA	0.28	2.14	0.08	0.28	2.78	21	7.0	9.7
TRICHOPTERA	1.30	3.04	3.69	1.83	9.86	75	24.7	10.9
OLIGOCHAETA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	1.6	5.3	3.9	2.2	13.1	100	32.7	16.6



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 19 (Bitterroot River near mouth)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.03	0.10	0.50	0.17	0.80	7	2.0	2.1
DIPTERA	0.06	0.14	0.10	0.25	0.55	5	1.4	0.8
EPHEMEROPTERA	0.03	0.06	0.08	0.25	0.42	4	1.1	1.0
LEPIDOPTERA	0.00	0.08	0.02	0.01	0.11	1	0.3	0.4
PLECOPTERA	0.02	0.68	0.09	0.50	1.29	11	3.2	3.2
TRICHOPTERA	1.35	2.01	2.32	2.48	8.16	71	20.4	5.0
OLIGOCHAETA	0.04	0.06	0.00	0.03	0.13	1	0.3	0.3
TOTAL WEIGHT	1.5	3.1	3.1	3.7	11.5	100	28.7	9.3



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 20 (CFR @ Harper Bridge)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.00	0.01	0.00	0.01	0.02	0	0.1	0.1
DIPTERA	0.14	0.05	0.16	0.58	0.93	8	2.3	2.4
EPHEMEROPTERA	0.05	0.19	0.20	0.21	0.65	6	1.6	0.8
LEPIDOPTERA	0.00	0.00	0.01	0.00	0.01	0	0.0	0.1
PLECOPTERA	0.07	0.48	0.07	0.42	1.04	9	2.6	2.2
TRICHOPTERA	1.97	0.97	2.77	3.30	9.01	77	22.5	10.1
OLIGOCHAETA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	2.2	1.7	3.2	4.5	11.7	100	29.2	12.4

STATION: 22 (CFR @ Huson)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.04	0.02	0.03	0.02	0.11	1	0.3	0.1
DIPTERA	0.07	0.58	0.35	0.49	1.49	10	3.7	2.2
EPHEMEROPTERA	0.11	0.20	0.28	0.21	0.80	5	2.0	0.7
LEPIDOPTERA	0.01	0.00	0.01	0.00	0.02	0	0.1	0.1
PLECOPTERA	0.92	1.33	0.03	0.68	2.96	19	7.4	5.4
TRICHOPTERA	1.24	2.51	2.04	4.17	9.96	65	24.9	12.4
HEMIPTERA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	2.4	4.6	2.7	5.6	15.3	100	38.4	15.2



CLARK FORK RIVER MACROINVERTEBRATE DATA
BIOMASS (GRAMS WET WT)

STATION: 23 (CFR near Alberton)
DATE: August 11, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.01	0.01	0.00	0.01	0.03	0	0.1	0.1
DIPTERA	0.02	0.04	0.03	0.05	0.14	1	0.4	0.1
EPHEMEROPTERA	0.24	0.20	0.22	0.19	0.85	5	2.1	0.2
LEPIDOPTERA	0.04	0.08	0.07	0.12	0.31	2	0.8	0.3
ODONATA	0.00	0.00	0.00	0.01	0.01	0	0.0	0.1
PLECOPTERA	0.29	0.27	0.21	0.30	1.07	7	2.7	0.4
TRICHOPTERA	2.81	1.94	5.17	3.53	13.45	85	33.6	13.7
TOTAL WEIGHT	3.4	2.5	5.7	4.2	15.9	100	39.7	13.4

STATION: 24 (CFR @ Superior)
DATE: August 13, 1986
SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.01	0.00	0.00	0.01	0.02	0	0.1	0.1
DIPTERA	0.06	0.09	0.06	0.04	0.25	4	0.6	0.2
EPHEMEROPTERA	0.10	0.07	0.06	0.03	0.26	4	0.7	0.3
LEPIDOPTERA	0.04	0.04	0.02	0.04	0.14	2	0.4	0.1
PLECOPTERA	0.32	0.04	0.37	0.09	0.82	12	2.1	1.6
TRICHOPTERA	1.40	1.65	1.04	1.00	5.09	75	12.7	3.1
OLIGOCHEETA	0.21	0.02	0.00	0.00	0.23	3	0.6	1.0
TOTAL WEIGHT	2.1	1.9	1.6	1.2	6.8	100	17.0	6.1



CLARK FORK RIVER(MACROINVERTEBRATE DATA
 BIOMASS (GRAMS WET WEIGHT)

STATION: 25 (CFR above Flathead R.)
 DATE: August 13, 1986
 SAMPLE TYPE: modified hess

TAXON	SAMPLE #				SUM	%RA	MEAN	STAND
	A	B	C	D				
COLEOPTERA	0.01	0.00	0.00	0.00	0.01	0	0.0	0.1
DIPTERA	0.03	0.01	0.01	0.07	0.12	4	0.3	0.3
EPHEMEROPTERA	0.03	0.05	0.01	0.05	0.14	4	0.4	0.2
LEPIDOPTERA	0.07	0.00	0.05	0.07	0.19	6	0.5	0.3
PLECOPTERA	0.03	0.09	0.12	0.03	0.27	8	0.7	0.5
TRICHOPTERA	0.93	0.20	0.44	1.03	2.60	78	6.5	4.0
OLIGOCHAETA	0.00	0.00	0.00	0.00	0.00	0	0.0	0.0
TOTAL WEIGHT	1.1	0.4	0.6	1.3	3.3	100	8.3	4.2

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APPENDIX E

Percentage community similarity coefficients (PCS x 100) for 23 location on the Clark Fork River and selected tributaries during August, 1986. Four Hess samples pooled at each station.

	STATION																							
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	20	22	23	24	25		
1	7	4	21	25	1	4	1	4	21	21	1	6	1	4	7	1	6	14	14	2	1	1		
2	25	3	8	7	5	7	4	2	3	1	6	5	10	6	2	9	3	3	4	3	1			
3	5	10	11	8	9	4	4	5	2	10	6	14	10	5	9	7	7	7	6	5				
4	34	7	17	6	9	27	25	4	10	7	14	25	24	24	22	24	28	27	27	27				
5	41	55	50	42	56	62	41	45	21	33	44	39	54	59	54	47	43	26						
6	48	44	26	21	30	28	29	25	26	25	22	31	28	25	20	22	12							
S	7	75	60	59	43	54	45	22	32	38	33	50	66	66	43	40	20							
T	8		60	56	40	61	41	22	25	32	32	49	60	59	41	34	16							
A	9			71	42	77	33	17	12	19	19	36	60	71	29	26	6							
T	10				59	69	36	14	16	24	22	36	68	81	31	29	9							
I	11					44	50	23	23	30	29	41	54	53	35	35	16							
O	12						36	15	16	21	25	37	59	72	31	29	12							
N	13							29	55	37	38	59	45	43	43	44	22							
14									27	24	23	32	27	21	26	27	18							
15										59	58	49	28	27	45	38	31							
16											75	50	39	37	56	45	35							
18												52	35	31	65	59	46							
19													53	50	65	63	43							
20														80	47	42	20							
22															42	38	18							
23																68	55							
24																	66							

